RAILROAD GAZETTE

FRIDAY, FEBRUARY 23.

English First-Class Carriages.

We publish this week a drawing of an English first-class carriage of the most modern type, which may be taken as a fair example of the usual style adopted by the best equipped lines in England.

The carriage is divided into four compartments, each seating eight passengers, or 32 in all. The length is 30 ft., width 8 ft. outside, and height from floor to roof in centre 7 ft. 4 in. The framing of the body, including the "hoopsticks" or carlines, is constructed of Moulmein teak and Honduras mahogany. The panels, also of Honduras mahogany or "baywood," are ⅝ in. thick, fastened by copper panel pins, canvased before being put on, and afterwards well secured by another coat of canvas over the battens and by wood blocks glued on. The canvas then receives one coat of lead color paint, the panels, together with the joints of framing throughout, being well bedded in white lead. The floor boards, 1⅛ in. thick, are of Baltic redwood, laid transversely, grooved and tongued with wood tongues; an underlining of ⅝ in. yellow-pine boards, is also screwed to the bottom framing, the space between the two layers of boarding being packed with dry sawdust rammed tightly in, this being intended to deaden the noise and vibration when travelling. Openings for the wheels are left in the floor and are covered by iron plates ¼ in. thick, as shown in Fig. 4. The inside casing or lining boards are ⅝ in. thick, of yellow pine, and the seat boards below the springs, of the same material, ¾ in. thick. The partitions are in two thicknesses of ⅝ in. yellow pine, with a layer of thick felt between them, for the purpose of deadening any noise in the next compartment. The roof boards are ⅜ in. thick, of pitch pine, feathered and grooved, and the exterior covered with prepared outside roofing cloth, in one piece, laid on in the following manner: The roof boards after being painted with two coats of lead color paint, receive a strong coat of McIlwraith's mastic priming, and whilst still moist the roofing cloth is drawn smoothly over and nailed to the cornices at the sides and ends, the nails being covered by a moulding; the cloth afterwards receives three coats of stout white-lead paint. We may remark that thick white lead is often used instead of the mastic priming, and sometimes stout paste is used instead.

The window frames throughout are of teak or mahogany, glazed with British polished plate glass. The side windows, or "quarter-lights" as they are termed, having ¼ in. glass, are fixtures, secured by small brass plates, but the door frames, glazed with $\frac{3}{16}$ in. glass, are constructed to fall down upon small india-rubber or stuffed leather pads. The upper part of the frame is provided with steel springs to prevent rattling, and it is lifted and lowered by means of straps made of broad coach lace and morocco, which work over ebony rollers in brass brackets attached to the "garnish rail," and provided with holes for ivory studs to keep the windows half-way down or in other desired position. The upper part of the door inside is provided with a mahogany sliding ventilator, having an ivory handle, the opening outside being protected by a baywood hood or cowl. The doors are hung by three brass hinges, the centre one also forming a stop, by means of india-rubber cushions, of the kind known as Cross's patent; the handles and fastenings are Maxwell's patent, and the "private locks" have the ordinary square key-holes. Brass commode or safety handles are also fixed beside each door of the form shown.

The woodwork of the interior, above the upholstery, is lined with well-seasoned plane-tree, relieved by Hungarian ash facia borders and gilt mouldings, the whole being French polished. The roof boards are lined with dry baywood panels ⅝ in. thick, between the hoopsticks, the latter being bordered by facia strips of the same material, the under side being moulded and cornered with gilt mouldings The exposed parts of the woodwork show no joints, and are carefully selected for their grain. The roof panels now receive three coats of clear white lead and one finishing coat of flat French white, a border being painted a different color all around the edges.

The compartments are upholstered in blue broadcloth and morocco leather. The cushions are reversible, the top side being of blue cloth and the under of morocco. They are stuffed with the best curled horsehair, inclosed in a strong canvas covering, tied in with daisy tufts on the cloth side and blue buttons on the morocco side, and finished with a row of seaming lace around the sides, ends and corners. The cushions, which are removable, are laid upon three rows of copper-coated sofa springs, 4 in. high by No. 8 Birmingham wire gauge thick, which are fastened to the seat boards, covered with stout webbing and canvas, and on the top of all by black linen. The elbow and head rests are similarly stuffed and trimmed with canvas, morocco, blue cloth and lace respectively. The centre elbow rests are movable and mounted on strong wrought-iron hinges, provided with steel springs and friction rollers. The front seat rails and door pillars are trimmed with broad lace. The glass straps are lined at back with calfskin and trimmed with broad lace, and the arm straps or holders are stuffed with horsehair, lined with morocco, the front being of broad lace. The seat backs or "squabs" are of blue cloth, properly canvased, stuffed with horsehair, tied in with tufts and strained on a row of sofa springs placed behind the thick part of the back as shown. The doors and sides below the windows are canvassed, stuffed with horsehair, covered with morocco and cloth respectively, and finished with seaming lace. The cushions and backs in each compartment take 90 lbs. of horse-hair, the elbow rests, squabs, and head rests, 22 lbs., and the seats and backs 86 sofa springs. A pair of sliding curtains is provided on each side, covering the "quarter-lights," and reaching to the centre of the door; these are of blue merino, suspended by wood rings sliding upon wood rods supported by brass brackets. A "parcel net" is fixed over each seat, made of worsted netting strained upon a wood rod, and supported by four ornamental brass brackets. Hat cords are also fixed on the ceiling in pairs, by means of brass staples, for the purpose of suspending gentlemen's silk hats. The floor is carpeted with Brussels carpet, and the space between the seats covered by handsome Axminster or other rugs. The lamps are 8 in. in diameter, constructed to burn sperm oil, and are put in place from the outside of the roof in the usual English method. Hinged lamp-covers protect the lamp, and wood plugs are provided to fill the hole when the lamp is removed. We may mention that many of the railroad companies are now abolishing these covers as being unnecessary and troublesome to open and shut every time the lamp is removed.

The carriages were painted as follows: The exterior of the body receives two coats of the best white-lead paint, two coats of patent filling-up, then properly stopped; then three other coats of patent filling-up, two coats of lead color, one of brown, two of pure lake, one of lake and varnish, three of clear body varnish, and finished with one of "Harland's" best body varnish, all flattened down between each coat, picked out, fine-lined, lettered, and numbered. The ends are finished in brown color.

The underframe iron "sole-bars" or side-sills, are filled up and grained to represent teak. The iron work where exposed to view is painted lake, picked out and fine-lined, and all the other iron work, wheels, etc., have two coats of black. The timber underneath receives one coat of gold size and one of varnish.

The body rests upon 34 of Attock's patent india-rubber cushions placed between it and the underframe and bolted to the latter by sixteen ⅝-in. bolts.

A number of brass rollers and brackets are fixed along the side of the roof cornice, to carry the communication cord between the passengers and the engine-driver.

We now turn to the underframe, which is made quite separate from the body and is 1 in. shorter than the latter, being 29 ft. 11 in. long over "headstocks" or front sills. The timber is of Moulmein teak, the sole-bars being plated with angle-iron bars extending the full length, 8 in. x 4½ x ½ in., in the manner shown, and finished off at the top with wood mouldings. The foot-boards, two on each side, are of pitch pine supported by wrought-iron brackets, are shod with roughened iron plates at each doorway, and have ⅝-in. bolts, through them near each end to prevent splitting.

The wheels are 4 ft. in diameter, of Cleminson's patent, the "boss" or hulk is of cast steel and the "washer" of scrap iron, both bored and turned on the face. The centres are of Moulmein teak; the retaining rings are of Mansell's plan, and the bolts of best Yorkshire iron. The tires are of Bessemer steel, 5 in. x 2½ in., forced on by a pressure of 80 tons. The axles are of Bessemer steel, forced into wheels at a pressure of 50 tons, and secured by keys 1 in. by $\frac{1}{4}$ in. They are 4¼ in. in diameter at centre, 5 in. at shoulder, and 4¾ in. through the bars, the journals being 8 in. long by 3½ in. in diameter and 6 ft. 6 in. apart from centre to centre.

The axle or journal boxes, are of tough cast-iron, the bearings being gun-metal of the following mixture: Copper 85.3 per cent.; tin, 12.0 per cent. and zinc, 2.7 per cent. The covers are of brass, fitted with springs. The centre axle boxes have an inch more play than the end ones in the horn-plate guides to facilitate the passage of curves.

The bearing springs are of the laminated form, 8 ft. long, and 4 in. wide, made of steel converted from Swedish iron, carefully tempered and tested before being fixed. Those for the end wheels have nine ½ in. and one top tension plate ⅝ in. thick; and those for the centre springs have one plate less. The hoops are provided with clips to catch the side of the axle box. The end springs are suspended by brackets and links and the centre ones hung from long links, attached to india-rubber pads, enclosed in malleable iron boxes, fitted into suspending irons as shown, this latter plan allowing more play for passing curves.

The buffing and main draw springs are of the laminated form, and of similar material to the bearing springs. They consist of 19 plates, 3in. by ⅝ in., and have a loop shrunk on to take the draw-bar pin in the manner shown. These springs are set to give a buffing range of 10 in. and a draw pull of 2½ in., with a camber of 2 in. when driven "home" by the buffers. An auxiliary draw-spring works upon the draw-bar, being Sterne's patent junction rubber, having three india-rubber rings cemented to steel division plates. A screw coupling is fixed in the hook of the draw-bar, which is also provided with a weighted catch to prevent the coupling jumping out. All the draw-gear is of the best Yorkshire iron.

The buffers have scrap-iron heads, made flat and round alternately, the other end of the rods being fitted into wrought-iron shoes, to take the spring, and the round part turned to 2½ in. diameter to fit cast-iron guides bolted on the headstock.

The "axle guards" or horn-plates are of plate iron 1 in. thick, well stayed by rods as shown.

—Mr. Wm. Bliss, President of the Boston & Albany, with his family and a few friends, starts this week on an extended trip through the Southwest and into Mexico.

Contributions.

Attachment of Fittings to Locomotive Boilers.

PITTSBURGH, Feb. 19, 1883.

TO THE EDITOR OF THE RAILROAD GAZETTE:

Some time ago a pamphlet was issued by M. N. Forney, of New York, in which the attention of railway men and others was drawn to the dangers of locomotive drivers and firemen being scalded in the event of fittings being displaced or broken during collisions, etc., and suggesting that some change should be made in the method at present adopted in the arrangement of steam fittings on the back of boiler, so as to lessen the dangers from this cause.

Would it not be well for those having the management of the Exhibition of Railway Appliances, etc., to be soon held in Chicago, to offer a prize for the best model of fittings, etc., for locomotives, which could be arranged so as to do away with any openings in the back of boiler, etc.

LOCOMOTIVE.

Some Fast Trains in France.

TO THE EDITOR OF THE RAILROAD GAZETTE:

I inclose you some high speeds from the French railways which I believe were not mentioned in any of the articles of the recent discussion on high speeds in your columns.

On the Paris, Lyons & Mediterranean the express from Marseilles to Paris makes 863 kilometers, or 535.06 miles in 17 hours 9 minutes, losing 1 hour 10 minutes standing at stations, which leaves 15 hours 59 minutes for actual running time, with an average speed of 33½ miles per hour. Her best time is between Avignon and Marseilles, where she makes 44.2 miles per hour.

On the Chemin de fer d'Orleans, the express Paris-Bordeaux makes 44.7 miles per hour between Angouleme and Coutras.

PITTSBURGH, PA. L. O. DANSE.

Adoption of Standards.

TO THE EDITOR OF THE RAILROAD GAZETTE:

I send you for publication, with the writer's consent, the following extract from a letter recently received from an intelligent and competent Superintendent of Machinery of a large railroad property. It is very desirable that the questions of the adoption of general standards in railroad devices, and the introduction of valuable improvements without unnecessary delay or expense, should receive immediate and serious consideration. It seems apparent from reading the following that the writer considerably underestimates the value and resulting economy of *the adoption by all the railroad companies of these few and simple standards which he himself recommends for general adoption;* and that greater stress could be properly laid upon the fact that thirty standard patterns are far better than three hundred, and three infinitely better than thirty.

J. H. R.

"Much has been said of late years in regard to 'uniformity,' and the adoption of standard patterns for the various parts of freight cars, and the vast sums that could be saved annually if a general uniformity in pattern could be adopted. While uniformity is desirable, and much money would be saved annually if adopted, yet I believe many of the statements made from time to time as to the amount are greatly exaggerated, as applied to *all* roads. It is vastly more important to the roads in one system, or under one management, that there should be uniformity in their case than that *all* other roads in the country should adopt the same pattern. Cars have a home, a road on which they belong, and while they may run over many others, yet they return at intervals. It is desirable they should return, and at such times they can receive needed repairs. In my opinion the time has not yet come for the *universal* adoption of certain patterns of freight car in all its *details*. *The car is yet entirely too far from perfection to adopt it as a standard and declare that we will go no farther in its improvement, but stop here.* It is better to put up with present ills in the use of these short-lived structures for a few years yet *than stop where we are*, aside from the adoption of a few of the main parts which occasionally need renewal while cars are in transit on foreign lines, namely, in particular, diameter and pattern of the chill in which to cast the wheel, including the shape of the flange, car axle (this is now fast coming to be the Master Car-Builders' standard), oil-box, brass bearing—*pattern* of—brake-head and shoe (perhaps draw-head), draw-spring (length and diameter and follower plates), and height of draw-bar above rail (33 to 34 in. is that now generally adopted). 'Dead blocks' are a matter not yet fully developed; some changes to the *framing* of the car, perhaps, must come first in order to meet the requirement.

"With these parts named adopted as standards, the other parts may be left alone to *grow into more perfect forms* for a few years. Owing to the different kinds of freight to be carried on different lines, uniformity in pattern of car-body will never be adopted. Cars used for cotton and other bulky freight must be *larger* than those used for general merchandise, to be economical in storing capacity, and cars used for fruit and vegetables a part of the year, must be of a different plan from ordinary box cars. Refrigerator cars must differ again from both. Cars for coal where the coal is shoveled from the car must differ from those that are used where the coal is *dumped* from the bottom. Stock and flat cars differ from the others in size of many of their timbers. Cars for *logs* and long heavy timber must differ in being *better trussed* than ordinary flat cars, and so on. Each road has some special class of business requiring some special pattern or size of car in order to suit best for the work to be done, and if a dozen different patterns are used on a road, the material is on hand to repair almost any pattern car from a foreign road, if wrecked or damaged, and if a car is *badly* wrecked, the usual and the best plan is to settle for it in money. Roads will build cars that are *best adapted to* their business, regardless of the question of uniformity as regards cars on other roads, and regardless of reports and recommendations of committees. I don't look for great advances toward uniformity, other than in a few of the parts I named, for some time to come, mainly for the reasons given and for a further reason that it will be found impossible for men to agree upon the particular patterns that should

be adopted as a standard, any more than they could be induced to adopt a particular pattern of house to live in, carriage to ride in, church to attend, political creed to adopt, that would suit all, and thus save expenses by uniformity and concentration. Already the question is asked, should we not adopt a larger axle, or, at any rate, a larger journal, than that of the Master Car-Builders' axles, and I think there is good reason for the inquiry. The journal is too small for the 20, 25 or perhaps 30-ton loads that will be put in cars in the future; it is small for 20 tons, and if we are already growing out of the standard that is only beginning to be adopted, what may we not expect in a few years more? The mistake made in the adoption of that axle was in not making the journals 4 × 8 in., 5 in. in the wheel and about 4¼ at centre, or not less than 4⅛ (iron axles). If the leading roads themselves (on their own roads) would adopt uniform patterns *in their own cars*, where it is practicable, a long step would be taken in the direction of economy. This would reduce variety of pattern as much perhaps as 30 per cent.

"The entire freight car equipment is changed perhaps in about 12 years on an average, and the natural tendency of the changes of pattern will be in the direction of uniformity on the principle of 'the survival of the fittest,' and thus by degrees uniformity will be brought about as cars are perfect in their parts so far as it is practicable and desirable it should be so. There must necessarily be, always, considerable of a variety to suit the requirements of business, as stated above, and variety in kind of timber used in their construction, depending on the kind to be obtained in the vicinity of the place where cars are built. For instance, we must use the yellow pine and poplar where some roads use white pine and oak. Some roads must use metal roofs, others wood, the one unable to get wood at reasonable cost, the other getting plenty and cheap etc., etc." * * * * * * *

Are Sleeping Cars Healthy?

Railroad travel has become so much a part of American life that the time spent on wheels has much to do with our health condition. There are many improvements that can be made in connection with railroad service that have an intimate relation to human health: but as we have recently had full opportunity to study that railway carriage known as a Pullman sleeper, it is in order to discuss traveling in this special kind of a car. It is all the more important since, nowadays, one may have occasion to spend a whole week in the moving house, to live in it, to sleep in it, and even to eat in it, all of which can be done if we do not go further than St. Louis.

The make-up of such cars is far more important than of the day car. This kind of constant occupancy tends to accumulate certain insanitary conditions in a way that shocks an average Englishman after he has witnessed the arrangements of two or three nights and the toilet of the mornings. Ladies, who are close observers of the niceties of things, if tired, think reasonably well of a "sleeper" for a night or so; but after that we have noticed that enthusiasm over the car, *per se*, wanes. One of the first indications is to have the car made with as few projections, corners and moldings as possible. The model car has no creases, no beaded moldings, no filigree work. We recently rode in a car, made perhaps seven years ago, which had all these objectionable points, and so was necessarily dirty. We spent a night in another, which was mostly inlaid work, with smooth surfaces, and so greatly improved. Yet it was not difficult to perceive many particulars in which the full idea of smooth finish, that would not collect dust or organic matter, could be easily carried out. The model sanitary sleeping-car is yet to be built. An examination of the plush seats showed that springs were chiefly relied upon. Yet it is questionable whether, for day use, there should not be some neat covering that would admit of removal and washing. It is to be remembered that, as a rule, no man takes care of a bedroom as does a good housekeeper, and that the chances of airing bed clothes are wholly suspended. There is no reason why the upper berth should not have a ventilator, which would so admit of opening in pleasant weather as that the bed clothing could get some airing while fastened up in the day chest. The pillows are not put in cast-iron boxes under the seats, and so are as well kept as they can be; but there should be a distinct service by which all this car bed furniture should occasionally be subjected to a most thorough airing. Carpets are objectionable for sleeping-cars and should not need to be defended on the ground of warmth. A proper rug at each seat, which admits of shaking, would be far better. There is so much promiscuous spitting that the spittoon is often lost sight of, and at night is very apt not to be within reaching distance.

The porter service is very imperfect and unhealthy. Generally the porter is a man who does not take a bath. His mode of living is irregular. He covers up dirty garments. We would like to examine about 50 of those attendants in the presence of the company. There is great laxity in discipline. There is no car service that needs to be so military as this. Careful observation has convinced us that every porter, before service, should have special training, and then should be held to a very strict code of rules. Some of the conductors need the same lesson. Recently we waited 20 minutes after a car started from Philadelphia, which was advertised to be open an hour before hand, before the conductor could be found. The excuse was that he had three or four cars to serve. It is not conducive to health and longevity thus to be deprived of the purchased rest.

The matter of heating and ventilation is very important in railroad travel, also of lighting, which, in one of these cars, has special relation to both. We believe the time may come when the lighting may have much to do with the heating. Stoves are better arranged than formerly; but there is need of new arrangements for the more equable diffusion of heat. As to its degree, it does not suffice to say that we cannot suit all. Thermometers are cheap, and from 70 to 75 is a full standard. Three, placed at the centre and each end, would settle that matter. Draughts are not common if the porter knows anything about the inlets and outlets of air. After the curtains are down each man's berth becomes much separated from the rest of the car. There is no reason why, in the middle of the space now generally occupied by a mirror, and in a similar one above, there should not be an adjustable ventilator with a sieve or gauge so as to prevent draught and yet admit fresh air, if the occupant desires it. Often the car at night becomes suffocating for want of pure air. We have known it so close in the day time as to give that perceptible smell so often found in badly kept households. We admit that it is easier to hand out the little fee and put up with what you get. It is better to do that at the time; but it is not best to put up with these injuries to health permanently. Spencer was right in speaking of the moral cowardice involved in condemning all these light offenses. We ask that the Pullman Company and all other sleeping companies should wake up to the sanitary needs as well as the right comforts for the traveler, and put this entire service on a better basis, both as to the hotel itself and those that superintend it.—*New York Independent.*

Early Objections ot Railroads.

In the selections from the diary and reminiscences of the late Josiah Quincy, recently published in a volume entitled "Figures of the Past," there is a chapter called "Some Railroad Incidents." Mr. Quincy was one of the first and most prominent citizens of Boston engaged in carrying out railroads from that place. We take from this chapter the following:

Perhaps the most singular phenomenon in the history of

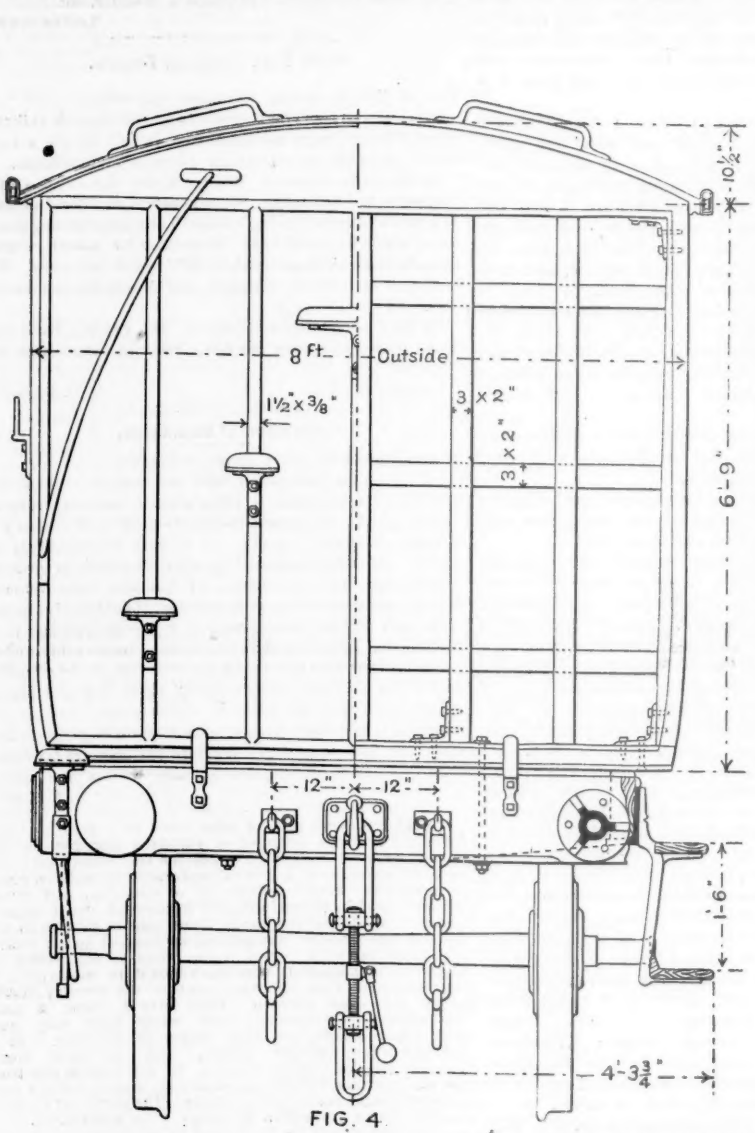


FIG. 4

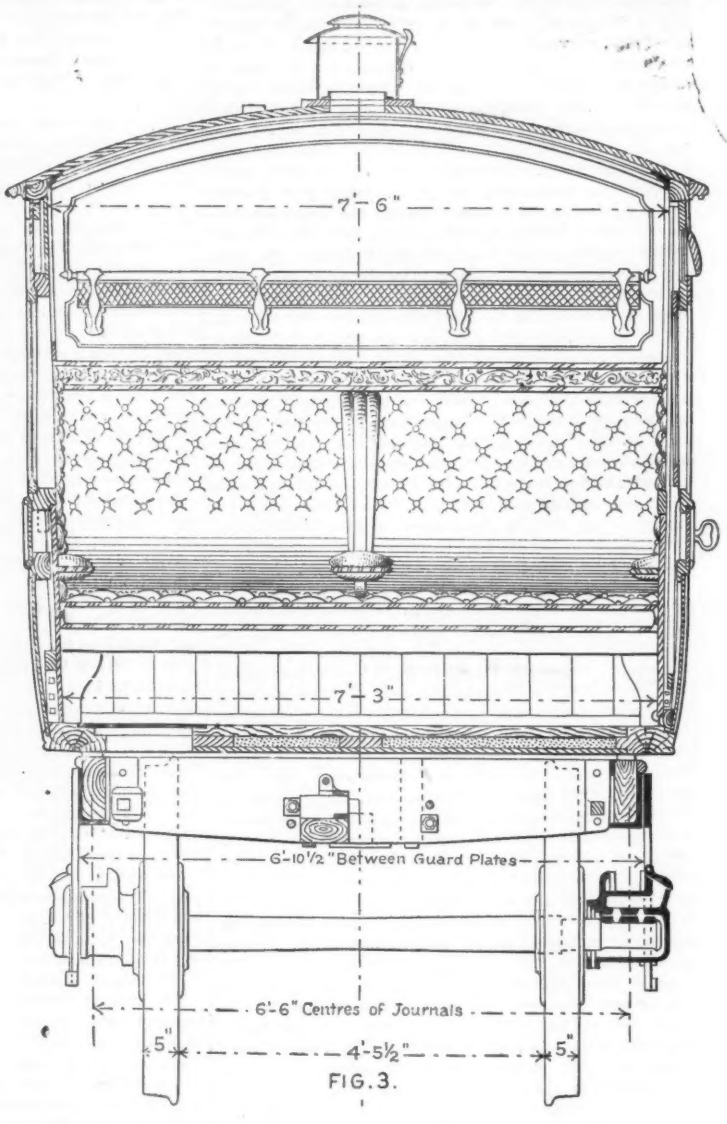


FIG. 3.

FIRST-CLASS ENGLISH RAILWAY CARRIAGE.

(*For Description see Page* 119.)

each railroad was the bitter opposition they encountered from leading men whose convenience and pecuniary interests they were directly to promote. The believer in railroads was not only to do the work and pay the bills for the advantage of his short-sighted neighbor, but, as Shakespeare happily phrases it, "cringe and sue for leave to do him good." Can I furnish proof of this incredible statement? Yes, I have it before me at this moment, and it is worth giving with some detail.

The old town of Dorchester, which some years ago was annexed to Boston, has within its ancient limits nine railroad stations, and at those most frequented about 50 trains stop daily. The main road, known as the Old Colony, passes over a route which I caused to be surveyed at my own expense, with the view of providing cheap transportation from the towns of Dorchester and Quincy and others to the south of them. I need not say that the land made accessible by this railroad has become very valuable, and that the business and population of the old town of Dorchester cluster about the stations. If any tyrant could tear up those tracks and prevent them from being relaid, his action would paralyze a prosperous community, and might well be called a calamity by those most careful in weighing their words. Now, can the reader believe that the very words I have italicised was chosen so late as 1842 by the inhabitants of the town of Dorchester, in regular town meeting assembled, to express their sense of the injury that would result to them and their possessions by laying a railroad track through any portion of their territory? No, there can be no mistake about it. Here is the report of their meeting, authentic in contemporaneous type, and duly attested by Mr. Thomas J. Talman, Town Clerk. A leading business man was chosen Moderator, and a committee of six prominent citizens was appointed to oppose the passage of a railroad through the town. The resolutions are worth reporting with fullness. The first declares it to be the opinion of the inhabitants of the town of Dorchester that a railroad upon either of the lines desig-

nated by those asking for a charter "will be of incalculable evil to the town generally, in addition to the immense sacrifice of private property which will also be involved. A great portion of the road will lead through thickly settled and populous parts of the town, crossing and running contiguous to public highways, and thereby making a permanent obstruction to the free intercourse of our citizens, and creating great and enduring hazard to all travel upon the common roads. The second resolution declares that if, in spite of the protest of the inhabitants of Dorchester, their town must be blighted by a railroad, "it shall be located upon the marshes and over creeks," and by thus avoiding all human habitations and business resorts "a less sacrifice will be made of private property and a much less injury inflicted upon the town and public generally." The concluding resolution is one of those jewels (rather more than five words long) that must suffer by any curtailment:

"*Resolved*, That our representatives be instructed to use their utmost endeavors to prevent, if possible, *so great a calamity to our town as must be the location of any railroad through it*, and if that cannot be prevented, *to diminish this calamity as far as possible* by confining the location to the route herein designated."

The italics are, of course, mine. They are quite irresistible. But when "calamities" threaten, the good man does not do his whole duty by protesting in town meeting. There is the powerful agency of the press, through which oppressors may be rebuked and their horrible projects brought to naught. Let me quote a few extracts from a newspaper article. It was written by a citizen of Dorchester and appeared shortly after the meeting. The writer has been speaking of existing facilities for water transportation, which he thinks should content certain inhabitants of the town of Quincy who are petitioning for a railroad.

"What better or more durable communicative can be had than the Neponset River or the wide Atlantic? By using these our thriving village will be destroyed, our enterprising mechanics ruined, our beautiful gardens and farms made desolate, and our public or private interests most seriously affected. Look at the rapid growth of Neponset village, through which this contemplated road is to run (the citizens of which are as enterprising and active as can be found, many of whom have invested their *all* either in trade, mechanical manufactures or real estate), and all—all are to be sacrificed under a car ten thousand times worse for the public than the car of Juggernaut! Look at the interests for instance, of the public house in this place, kept by a most estimable citizen who has ever ——"

But I have no heart to copy further. In the wreck of an entire community we can spare no tears for the woes of a single tavern-keeper. The ruins of that once prosperous village of Neponset are even to this day visited by reflective tourists. I think I mentioned that the Old Colony Company has a way of stopping some fifty trains there in order to accommodate moralists who take a melancholy satisfaction in musing among them.

Master Car-Builders' Meeting.

An adjourned meeting of Master Car-Builders and others met at the Tifft House, Buffalo, Feb. 14, at 10 a. m. Present, F. M. Wilder, Chairman; John S. Lentz, Secretary; Leander Garey, D. M. Brady, D. Hoit, E. A. Olmstead, C. H. Burchard, R. Donaby, W. McWood, John Kirby, Wm. Fuller, J. N. Mileham, E. B. Wall, J. H. Wicks, T. H. Munsell, A. Strauss, G. W. Babcock, B. P. Lamason, W. F. Turreff, J. D. McIlwain, C. Neilson, A. H. Gorten, G. S. Gatchell, A. C. Robson, W. Alderson, Robt. Miller, Robt. Potts and Milton Wilder.

The CHAIRMAN submitted correspondence from the New York, Pennsylvania & Ohio, the Pittsburgh, Cincinnati & St. Louis, the Cleveland, Columbus, Cincinnati & Indianapolis and the New York, Lake Erie & Western roads concerning the refusal of the first three to accept cars fitted with wooden trucks loaded for points off their line. A general discussion ensued, and it was mutually agreed hereafter cars should not be rejected unless some specific defect existed.

Mr. KIRBY moved that the minutes of this meeting be printed for general distribution; carried.

Mr. L. GAREY submitted that a large number of cars are now in service which would not take the standard link and pin. A general discussion on the subject of draw-heads, links and pins followed, and it was stated by the representatives of the following roads they were using links of sufficient size to take the large pin: Grand Trunk; New York, Lake Erie & Western; Lake Shore & Michigan Southern; Cleveland, Columbus, Cincinnati & Indianapolis; Michigan Central; Canada Southern, and the New York Central & Hudson River. The Grand Trunk and the New York Central & Hudson River use an oval pin, the others 1½-in. pins with round D link, as adopted at Buffalo, Jan. 13, 1881.

Mr. G. S. GATCHELL moved to recommend hereafter that no drawheads be fitted in new cars or repairs which will not take the standard link and pin;* carried.

Mr. J. D. McILWAIN moved that the recommendation adopted in reference to standard draw-heads be presented to the Executive Committee of the Master Car-Builders' Association; carried.

Mr. L. GAREY moved in cases where roads affix condition cards on cars, the owners of the cars may repair at cost and send card with bill. The responsible road, however, must be notified immediately on receipt of the car of each case; carried.

The cost of nuts, bolts and forgings being called for by several members, following prices were furnished, in cents per pound.

	Nuts.	Bolts.	Forgings.
N. Y., P. & O.	4¼	4¼	4¼
L. S. & M. S.	4	4	4
N. Y. C. & H. R.	4½	4½	4½
Pennsylvania Co.	4½	4½	4½
Grand Trunk	5	5	4
Michigan Central	4	4	4
Canada Southern	4	4	4
C., C., C. & I.	5	5	4½
Lehigh Valley	5	5	4½
Fall Brook Co.	5	5	4
Great Western	5	5	4½
N. Y., L. E. & W.	4½	4½	4½

Mr. F. M. WILDER stated that the New York, Lake Erie & Western has had several steel axles break after a mileage of about 120,000 miles in each case, and asked, "What is the life or mileage of a steel axle?" The Pennsylvania removes steel axles after 60,000 miles have been made, the Cleveland, Columbus, Cincinnati & Indianapolis use steel axles and expect to get 100,000 miles under freight cars.

Mr. R. MILLER asked, "Is the present form of Master Car-Builders' standard axle the best for strength?" The chairman stated the New York, Lake Erie & Western used a modified form 3½-in. journal, 4⅝-in. wheel-seat. He suggested that gentlemen present bring some data on the form, wear and mileage of steel and iron axles to the next meeting.

Mr. R. MILLER asked, "What is the weight of the 33-in. cast-iron wheels in use on the different roads?" Following answers give weight in pounds:

	Freight.	Passenger.
Lehigh Valley	530	545
Pennsylvania	525	525
N. Y. C. & H. R., not less than	525	525
N. Y., L. E. & W., not less than	525	525
L. S. & M. S.	540 to	550
Grand Trunk	565	565
N. Y., P. & O.	535	535
C., C., C. & I.	540	540
Fall Brook Coal Co.	540	540
B., N. Y. & P.	5 0	550
Great Western	550	557
Canada Southern	525	525
Michigan Central	525	525

The CHAIRMAN suggested that an examination of all broken wheels taken out for 30 days be made with a view to ascertaining why they fail, and that an accurate description of each wheel be presented at the meeting; agreed to.

Mr. E. B. WALL moved that a committee of three be appointed to secure a uniform list of terms to be used in reporting wheel and axle failures to car owners; carried.

Messrs. E. B. Wall, Wm. Fuller and D. M. Brady were named by the Chairman to comprise the committee.

Mr. L. GAREY moved that the next meeting be held at Buffalo, Monday, April 11, 1883; call and notice to be issued by the Chairman.

This was carried and the meeting adjourned.

* *Link.*—The measurement inside of link shall be 10 by 1¾ in. wide, section of iron forming the link shall be what is known as D shape, measuring 1⅜ in. vertical section and 1¼ in. horizontal section—the quality of iron used for links and pins shall be such as will stand a tensile strain of not less than from 45,000 to 50,000 pounds per square inch of section, and to have an elastic limit of not less than 27,000 pounds per square inch and to resist fracturing by slight hammering or concussions while under strain.

Pin.—The body of pin shall be made 1⅛ in. diameter and 10 in. long from under the collar or shoulder to the point—the head of the pin to be so formed that an eyehole be made through it for the purpose of securing it to the car by a chain.

THE SCRAP HEAP.

"Tramp" Railroad Men.

We have received from a general superintendent a communication vigorously denouncing a class of employés he denominates "tramps." Some men are born to be tramps, and they may be found in every class and calling; but it is a fact that railway management, in a greater degree than all other influences combined, is responsible for the development of this unfortunate propensity. The man who establishes a home in the true sense of the word has no desire to tramp. Unfortunately, under the present system of discharging employés for the smallest faults and more often for misfortunes for which they are in no way responsible, it is impossible for them to establish homes. Under the rules in force on most lines, there is not a trainman, however faithful, however intelligent and skillful, however devoted to service of his company, who can confidently assert, that in a day he may not be compelled to abandon his home and be sent out to tramp in search of employment elsewhere. He may have grown gray on the road, and his services to the company and his citizenship to the community may be of such value that neither can be replaced, yet he is forever haunted by the fear of that evil day, which come at last it must, and come it will, when deserted by fortune, he is compelled to sunder the associations and attachments of a lifetime and tramp for a new situation. Until our correspondent shall exert the influence of his high official position, to reform the present barbarous system of discharging employés, we trust that he will bear up a little on the tramp nuisance—a nuisance which railway management is so largely responsible for.—*The Railroader.*

A Colored Engineer.

The only colored locomotive engineer that we know of in the north is employed on the switch engine in the yard of the New York & New England Railroad at Fishkill Landing. He is a competent and faithful workman, and is respected by his employers and his fellow workmen.—*Port Jervis Gazette.*

Test of an Iron Axle.

The Lake Erie Iron Co. publishes the following record of test of an iron axle manufactured by it, made as per Pennsylvania Railroad formula, and tested in accordance with its requirements, namely:

3 blows, 10 ft. fall, weight of drop.....1,640 lbs.
2 " 15 " " " .....1,640 "

The axle being placed on bearings 3 ft. apart, and turned after each blow; finally tested to destruction, as noted below:

Blow.	Fall.	Deflection. Before blow.	Deflection. After blow.	Total.
1	10 ft.	0 in.	5⅝ in.	
2	10 "	5⅝ "	⅜ "	6 in.
3	10 "	⅜ "	5⅝ "	6 "
4	15 "	5⅜ "	3⅞ "	9¼ "
5	15 "	3⅞ "	6 "	9⅞ "
6	25 "	6 "	8 "	14 "
7	25 "	8 "	6 "	14 "
8	25 "	6 "	8¼ "	14¼ "
9	25 "	8¼ "	6¼ "	14¼ "
10	25 "	6¼ "	Broke.	

At the end of first five blows of prescribed test, axle showed perfect condition, so far as surface indication, and fit to put under a car for service.

Tested to destruction, with drop falling 25 ft., and axle turned after each blow, breaking axle with tenth; showing a clean fibrous iron crystallized only by the punishment.

ANNUAL REPORTS.

	Page.		Page.
Atchison, Topeka & Santa Fe	7	Maine Central	21
Boston, Barre & Gardner	73	New Haven & Northampton	7
Boston & Lowell	23	N. Y. Cen. & Hudson River	7, 8
Boston, Revere Beach & Lynn	100	N. Y., New Haven & Hartford	22
Charlotte, Col & Augusta	23	Ohio & Mississippi	1-5
Chicago, Bur. & Quincy	7, 11	Pennsylvania & N. Y.	73
Chi., Milwaukee & St. Paul	73	Philadelphia & Reading	22
Cincinnati, N. O. & Texas Pac.	39	Pittsburgh & Lake Erie	40
Cleveland & Pittsburgh	39	Portland & Ogdensburg	100
Columbia & Greenville	59	Portland & Rochester	100
Connecticut River	105	Providence & Worcester	1-4
Delaware & Hudson Canal	100	Rochester & Pittsburgh	41
European & North American	22	St. Paul & Duluth	100
Fitchburg	40	South Carolina	39
Grand Trunk	52	Virginia Midland	100
Hartford & Conn. Western	7	Western R. R. Association	37
Houston & Texas Central	39	Woodstock	100
Lehigh Valley	73	Worcester & Nashua	40
Long Island	73		

South Carolina.

This company owns lines from Charleston, S. C., to Augusta, Ga., 137 miles; Branchville, S. C., to Columbia, 68 miles, and Kingsville to Camden, 38 miles, making 243 miles in all. It also owns the Barnwell road, 9 miles, which is not included in the general statement. The present company was organized in 1881 as successor to the South Carolina Railroad Co., and bought the road at foreclosure sale. The report is for the year ending Dec. 31:

The general account is as follows, somewhat condensed:

Stock		$4,204,100.00
Old prior lien bonds, various issues		1,46 ,880.79
First consolidated bonds, 6 per cent		3,503,000.00
Second consolidated bonds, 6 per cent		847,000.00
Income bonds, 6 per cent. if earned		2,538,000.00
Old bonds due and ordered paid		146,522.04
Accrued interest, accounts and bills payable		353,579.37
Profit and loss		21,173.85
Total		$13,079,316.05
Railroad and property	$12,673,735.69	
Cash	95,458.40	
Charleston office	147,305.17	
N. Y. & Charleston Warehouse & Steam Nav. Co. stock	100,000.00	
Barnwell Ry	62,816.79	
		13,079,316.05

The report says:

"The company has in its treasury $50,000 first consolidated bonds, $483,000 second consolidated bonds and $462,000 income bonds.

"It is the sole owner of the New York & Charleston Warehouse & Steam Navigation Co., which has constructed 500 ft. front of new wharf on the Cooper River, a fertilizer warehouse with a capacity of 8,000 tons, and three freight sheds, all of which are being used to their full capacity.

"It also owns the Barnwell Railway, 9 miles long, now in operation and doing a paying business. Of the 205 miles of main line, 125 are laid with steel rails, and the remainder, excepting about 12 miles now being relaid with steel, is in excellent order.

"The Camden Branch, 38 miles, and the Barnwell Railway, are in satisfactory condition. Two thousand tons of steel rails have been bought and will be laid in 1883. This will leave less than 60 miles of iron rails in the main line, none more than slightly worn, and thereafter purchases of rails will be very light.

"The trustees of the first consolidated mortgage bonds hold, for the sole purpose of taking up prior liens, $1,447,000 first consolidated mortgage bonds and $170 second consolidated mortgage bonds. These prior liens mature semi-annually until 1888, and are canceled as fast as they can be paid."

The earnings of the road for the year were as follows:

	1882	1881.	Inc. or Dec.	P. c.
Passengers	$296,105	$261,899	I. $34,206	13.1
Freight	982,155	949,030	I. 33,125	3.5
Mail	19,535	20,462	D. 927	4 6
Freight car service	12,769	11,385	I. 1,384	12.1
Miscellaneous	3,257	2,510	I. 747	25.8
Total	$1,313,821	$1,245,286	I. $68,535	5.5
Expenses	812,631	744,335	I. 68,296	9.2
Net earnings	$501,190	$500,951	I. $239	....
Gross earn. per mile	5,407	5,125	I. 282	5.5
Net " "	2,063	2,062	I. 1	..
Per cent. of expenses	61.85	59.77	I. 2 08	....

In expenses there was a decrease of $4,882 in operating the road; an increase of $30,219 in repairs of machinery, and an increase of $42,958 in maintaining the road.

The following expenditures resulting in permanent improvements are included in the cost of maintaining road for 1882 and are the chief cause of the increase in this item over 1881: Labor of laying 3,000 tons of steel rails, $9,076.49; cost of three-fourths of a mile of Wateree trestle rebuilt, $14,347.15; cost of rebuilding culverts, $5,946.86; excess of cross-ties used (33,406), $10,118.48, a total of $39,488.98.

The further increase is fully accounted for by the increased cost of provisions furnished laborers, due in great part to the larger number employed by reason of above improvements.

The increased cost of repairs of passenger and baggage cars is chiefly due to the rebuilding of two passenger cars in place of two condemned, at a cost of $9,495.88. No such expenditure will be necessary in 1883.

The increased cost of repairs of freight cars is due to the rebuilding of 28 cars in place of a like number condemned or destroyed, at a cost of $13,080.

The income account for the 14 months from Nov. 1, 1881, to Dec. 31, 1882, is as follows, condensed:

Assessments received from Purchasing Committee		$1,521.96
Funds turned over by Receiver		142,361.28
Sale of $1,086,000 first con. bonds, to pay prior liens		1,037,177.40
Sale of $50,000 second con. bonds, to pay prior liens		44,733.84
Sale of $241,000 first con. bonds, to pay maturing liens		238,027.87
Sale of $216,000 second con. bonds, to pay maturing liens		193,250.15
Net earnings, Nov. 1-Dec. 31, 1881		109,873.52
Net earnings, 1882		504,687.03
Bills payable		75,000.00
Materials on hand, Nov. 1, 1881		48,795 66
Total		$2,415,428.71
Bonds and claims accrued before Nov. 1, 1881	$1,248,021.29	
Bonds matured since Nov. 1, 1881	306,052.33	
Betterments from improvement fund	169,796.60	
Wharf and track of Warehouse Co.	83,671.67	
Barnwell Ry	62,816.79	
Interest, Nov. 1-Dec. 31, 1882	81,770.33	
Interest, 1882	222,466.13	
		2,174,665.14
Balance		$240,763.57

Interest accruing in 1882, including income bonds, was $484,717.17; deducting $262,251.04 accrued but unpaid leaves the amount of $222,466.13 given above.

The net earnings for 1882 include $501,190.08 from the South Carolina road; $1,055.47 from the Barnwell road (opened Nov 20), and $2,441.48 from the New York & Charleston Warehouse & Steam Navigation Co. property.

Huntingdon & Broad Top Mountain.

This company owns a line from Huntingdon, Pa., to Mt. Dallas, 45 miles, with 17 miles of coal branches, making 62 miles in all. The report is for the year ending Dec. 31.

The liabilities are as follows:

Common stock		$1,266,450
Preferred stock		1,923,000
First-mortgage bonds	$416,000	
Second-mortgage bonds	367,500	
Consolidated bonds	1,497,000	
		2,280,500
Old interest scrip		123,115
Total stock and bonds		$5,593,065

The consolidated bonds bear 5 per cent., the other debt 7 per cent. interest, making the yearly interest charges $138,313 on the whole debt.

The freight traffic for the year was as follows:

	1882.	1881.	Inc. or Dec.	P.c.
Broad Top coal	271,217	204,819	I. 66,398	32.4
Cumberland coal	208,031	313,601	D. 105,570	33.6
Total coal	479,248	518,420	D. 39,172	7.6
Tons other freight	152,864	165,003	D. 12,139	7.3
Total, tons	632,112	683,423	D. 51,311	7.5

The Broad Top coal is mined on the line; the Cumberland is carried through over the whole length of the main line for the Pennsylvania Railroad Co. There was a small decrease in iron ore and general freights and an increase in Broad Top coal, the total decrease in tonnage being chiefly

on account of the stoppage in shipments due to the long strike in the Cumberland coal region.

The earnings for the year were as follows:

	1882.	1881.	Inc. or Dec.	P.c.
Coal	$159,189	$185,591	D. $26,402	13.2
Freight	107,582	98,435	I. 9,147	9.3
Passengers	44,616	40,554	I. 4,062	10.0
Mail, etc	9,047	8,073	I. 974	12.0
Total	$320,434	$332,653	D. $12,219	3.7
Expenses	144,249	149,284	D. 5,035	3.4
Net earnings	$176,185	$183,369	D. $7,184	4.0
Gross earn. per mile	5,168	5,365	D. 197	3.7
Net " "	2,832	2,954	D. 122	4.0
Per cent. of exps.	45.0	44.8	I. 0.2	....

The income account was as follows:

Net earnings	$176,185
Interest	138,313
Surplus for the year	$37,892

This surplus was applied to improvements and reduction of floating debt, etc.

The great drawback of the year was the lack of proper transportation facilities. The report says that negotiations are now pending with the Pennsylvania Railroad Co. as to a basis on which their cars shall be run on the road, and if this arrangement terminates satisfactorily a car trust will be made to supply a limited number of cars.

Chicago & Alton.

At the close of the year 1882 this company worked lines whose mileage was as follows:

	Main track.	Second track.	Sidings.	Total.
Chicago to Joliet, leased	37.20	39.64	22.60	99.44
Joliet to East St. Louis	243.50	20.48	66.81	330.79
Coal City Branch	29.76	....	10.17	39.93
Dwight to Washington and Lacon	79 80	....	7.16	86.96
Roadhouse to Louisiana	38.10	....	6.86	44.96
St.L., Jacksonville & Chi., leased	150.60	....	15.53	166.13
Louisian & Mo. River., leased	100.80	....	16.35	117.15
Mexico to Kansas City, leased	162.62	....	28.10	190.72
Upper Alton loop line	7.40	....	....	7.40
Total	849.78	60.12	173.58	1,083.48

During the year the Upper Alton loop was added, and the length of the Coal City branch was reduced 3.98 miles, part of the branch before reported as main line being now, apparently, reported as sidings. This makes a net increase of 3.42 miles of main line. There was an increase in sidings reported of 4.71 miles; in total length of all tracks of 813 miles.

The equipment consists of 213 locomotives; 105 passenger train cars; 3,223 box, 1,348 stock, 1,360 flat and coal, and 97 caboose and drovers' cars; 16 tool and boarding cars. There are also 19 Pullman sleeping cars in regular service on the road.

The general balance sheet is as follows:

LIABILITIES.

Income account	$1,859,081.18
Vouchers and pay rolls for December, 1882, due January, 1883	425,467.59
Wages checks issued prior to Dec. 1, 1882, not presented	33,282.29
Unpaid wages due prior to Dec. 1, 1882, not claimed	22,265.03
Sundry items of rent accrued on leased lines, not yet due	142,741.67
St. Louis, Jacksonville & Chicago R. R. Co	134,426.46
Kansas City, St. Louis & Chicago R. R. Co	6,363.70
Kansas City, St. Louis & Chicago construction account, unexpended balance of the construction fund	251,821.83
Amount appropriated from the K. C., St. L. & C. R. R. construction fund for equipment	265,216.80
Capital stock, common	12,504,600 00
Capital stock, preferred	2,425,400.00
Old common stock scrip outstanding	72.00
First-mortgage bonds	2,400,000.00
Income bonds	1,096,000.00
Sinking fund—gold bonds	2,805,000.00
Consolidated sterling bonds	4,379,850.00
St. Louis, Jacksonville & Chicago first-mortgage bonds assumed, account of line, Roadhouse to Louisiana	564,000.00
St. Louis, Jacksonville & Chicago second-mortgage bonds, assumed account of line, Roadhouse to Louisiana	188,000.00
Louisiana & Missouri River bond account	439,100.00
Bonds unissued	30,000.00
Stock unissued	4,572.00
Sinking fund bonds paid and canceled	600,000.00
Sinking fund gold bonds redeemed	195,000.00
Trustees, cash	3,241.39
Unclaimed dividends	732.70
Unclaimed coupons	525.76
Amount received from sales of locomotives unappropriated	27,400.00
Unclaimed freight and baggage	2,321.06
Union depot, Alton	100.00
Bloomington depot ground	100.00
Missing sinking fund coupons	70.00
Geo. Straut, Land Trustee	2,431.10
Amount due to foreign roads and individuals and companies	293,835.29
Total	$31,103,037.85

ASSETS.

Cost of road and equipment	$20,222,700.88
Coal City Branch construction	508,461.35
Western Division construction	1,116,724.91
Louisiana Branch construction	1,389,537.92
Cash on hand and on call	2,105,147.97
Due from agents, cash in transit	251,006 82
Supplies for current operations road department	84,461.22
Supplies for current operations in car and locomotive department	289,134.56
Machinery and tools in machine shops	165,661.18
Machinery and tools in car shops	65,760.22
Bills receivable (includes notes of Louisiana & Mo. River R. R., for $311,187.96)	380,581.07
Trustees' sinking fund mortgages	22,626.71
James Robb, Special Receiver, bonds deposited to meet contingent liabilities	40,000.00
Samuel J. Tilden and Lewis H. Meyer, Trustees, bonds, etc., in their hands	37,813.39
Kansas City, St. Louis & Chicago R.R. stock	157,600.00
Kansas City, St. Louis & Chicago first-mortgage bonds	3,000,000.00
Mississippi River Bridge stock	300,000.00
Mississippi River Bridge bonds	200,000.00
Louisiana & Missouri River second-mortgage bonds	70,000.00
Inter-State Industrial Exposition stock	1,000.00
Income scrip	1,121.40
Chicago & Mississippi R R. bonds	2,500.00
Income bonds purchased	15,500.00
Sinking fund bonds purchased	4,636.59
Manistee, Mich., lands; Trustee	1,062.45
United States Government, Post-Office Department	29,646.05
Kansas City union depot	6,666.67
St. Louis, Jacksonville & Chicago R.R. construction account (Upper Alton Line)	316,022.92
Geo. Straut, Trustee (Odell Property)	5,000.00
Louisiana & Missouri River R.R. Co	89,374.27
Amount due from foreign roads and individuals and companies	223,269.20
Total	$31,103,037.85

Of the cash on hand the sum of $1,083,000 was held to pay the income bonds which matured Jan. 1, 1883, and were then paid.

During the year $1,323,200 new common stock was issued and sold. The $306,000 Joliet & Chicago bonds maturing July 1 were paid, and $69,000 sinking fund bonds were redeemed and canceled. The bonded debt, including the income bonds paid off Jan. 1, 1883 (for which means were provided in 1882), was reduced by $1,458,000.

The total amount of bonded debt, including leased line bonds assumed, is $11,458,950.

The traffic for the year was as follows:

	1882.	1881.	Inc. or Dec.	P.c.
Train miles:				
Passenger	1,550,018	1,466,965	I. 83,053	5.7
Freight	2,513,523	2,436,397	I. 77,126	3.2
Car miles:				
Passenger train cars	8,202,665	7,627,152	I. 575,513	7.5
Freight cars	63,136,584	61,393,932	I. 1,742,652	2.8
Service cars	892,189	1,015,047	D. 122,858	12.1
Passengers carried	1,666,991	1,495,606	I. 171,385	11.5
Passenger miles	101,150,959	92,847,464	I. 8,303,495	8.9
Tons freight carried	3,522,840	3,275,004	I. 247,836	7.6
Ton miles	474,823,908	447,009,977	I. 27,813,931	6.2
Average receipt:				
Per passenger mile	1.951 cts.	1.828 cts.	I. 0.123 cts.	6.7
Per ton mile	1.261 "	1.241 "	0.020 "	1.6

Of the freight-car mileage last year 71.771 per cent. was of loaded cars. Foreign freight cars ran 19,650,192 miles on this road, and Chicago & Alton cars ran 12,566,370 miles on foreign roads.

Of the total number of passengers 92.58 per cent. were local. The average rate per mile for local passengers was 2.193 cents. The average journey of local passengers was 45.12 miles; of all passengers, 60.72 miles. The average freight haul was 134.78 miles.

Some statements of train movement were as follows:

Av. train load.	1882.	1881.	Inc. or Dec.	P. c.
Passengers, number	60.257	63.292	I. 1,964	3.1
Freight, tons	188.907	183.472	I. 5,435	3.0
Earnings per train mile:	Cts.	Cts.		
Passenger	145.289	135.161	I. 10.128	7.5
Freight	230.644	227.667	I. 8.977	3.9
Average, all trains	202.175	193.621	I. 8.554	4.4
Expenses, "	115.281	110.709	I. 4.572	4.1
Net earnings "	86.894	82.912	I. 3.982	4.8

The average tonnage for each loaded freight car was 10.478 tons; average for all cars, loaded and empty, 7.521 tons. The above figures do not include 391,709 tons carried for the company.

The business to and from the three terminal cities was as follows:

	Passengers.		Tons freight.	
	1882.	1881.	1882.	1881.
To Chicago	151,204	137,228	1,042,952	1,224,061
From "	163,160	165,442	619,198	576,486
To St. Louis	131,935	122,790	369,326	457,350
From "	123,784	124,366	351,172	327,204
To Kansas City	68,381	63,378	282,072	318,717
From "	62,043	43,838	230,252	201,945

The total tonnage of coal transported was 1,366,641 tons, against 1,190,241 tons in 1881, an increase of 176,400 tons, or 14.8 per cent.

The earnings for the year were as follows:

	1882.	1881.	Inc. or Dec.	P. c.
Freight	$5,948,123	$5,546,869	I. $401,253	7.2
Passengers	1,973,101	2,696,542	I. 275,559	16.2
Express	159,090	137,399	I. 11,691	7.9
Mails	119,817	137,996	D. 18,179	13.2
Miscellaneous	15,364	27,934	D. 12,579	44.9
Total	$8,215,495	$7,557,740	I. $657,755	8.7
Expenses	4,485,881	4,149,713	I. 336,168	8.1
Net earnings	$3,729,614	$3,408,027	I. $321,587	9.4
Gross earn. per mile	9,668	8,992	I. 676	7.7
Net " " "	4,389	4,055	I. 344	8.2
Per cent. of expenses	54.60	54.90	D. 0.30	....

Of the operating expenses there was paid last year for labor and personal services 55.4 per cent.; for supplies of all kinds, 34.5 per cent., and for miscellaneous expenses, 10.1 per cent. The total amount paid in 1882 for labor and personal services was $2,557,192.

The fuel used in operating the lines was 267,430 tons of coal and 6,341 cords of wood. The average cost, delivered on the tenders, was $1.40 per ton of coal and $2.26 per cord of wood.

The income account was as follows:

Balance, Dec. 31, 1881		$1,442,440.66
Interest, dividends, etc., received		332,547.24
Gross earnings for the year		8,215,495.12
Total		$9,990,483.02
Interest on funded debt	$761,122.23	
Dividends, March and September	1,083,080.00	
Rent, Joliet & Chicago	117,615.00	
" St. L., Jacksonville & Chicago	424,000.00	
" Louisiana & Mo. River	188,942.37	
" Kan. City, St. L. & Chi	333,977.00	
" Miss. River Bridge	63,000.00	
Joliet & Chicago bonds paid	306,000.00	
Sinking fund bonds paid	79,574.06	
Additions to property	71,221.56	
Suspended accounts written off	18,366.12	
Taxes of all kinds	198,621.97	
Working expenses	4,485,881.53	
		8,131,401.84
Balance, Dec. 31, 1881		$1,859,081.18

Additions to property paid for from income included new buildings, $14,865.14; real estate bought, $38,431.35; new sidings, 3.07 miles, $17,925.07; total, $71,221.56.

During the year one caboose and 100 stock cars were added to the equipment. Eleven engines were built in the company's shops to replace an equal number of old, light engines sold.

The replacement of iron rails with steel rails of 60 and 70 lbs. per yard on all the main lines, including first, second third and fourth main tracks, has been completed. The company has now 780.70 miles of main tracks and 3.98 miles of sidings laid with steel.

The new loop line from Godfrey through Upper Alton to Milton, 7.40 miles, was completed and opened for traffic July 15. The maximum grade on this line is 32 ft. to the mile. The old line between the same points is 9 miles long, and has a grade of 90 ft. to the mile for 2½ miles. This exceptionally steep grade has been for many years the cause of increased cost in working the Alton Division. The two lines are now used as a double track, and the helping engines heretofore required on the long grade are not now needed.

A new iron bridge 600 ft. long has been built over the Kankakee River on the Illinois River road. At other points 12 iron spans have been erected to replace wooden bridges.

About 80 miles of road have been ballasted with stone, gravel and cinders, the cost being about $1,000 per mile. Proper material for ballasting can be found at only a few points on the line, and much of the ballast used had to be hauled long distances.

The rental paid for the use of the Joliet & Chicago road is fixed, and no separate account of the earnings is kept. The gross earnings of the other leased lines were as follows:

Kan. City, St. Louis & Chicago	$1,407,689
Louisiana & Mo. River, Main Line	499,848
" " " South Branch	49,712
St. L., Jacksonville & Chicago	1,102,697
Total	$3,059,946

The earnings from traffic on these lines and on the line owned by the company from Roodhouse to Louisiana, including the bridge over the Mississippi (forming 53.20 per cent. of the whole road worked) amounted in 1882 to 43.55 per cent. of the entire gross earnings.

The report says: "The following statement shows gross earnings for 1882 from transportation of farm products for the year 1882:

Description of farm products.	Gross earnings on shipments from local stations in Illinois.	Gross earnings on shipments from local stations in Missouri.	Total.
Wheat	$109,146	$177,231	$286,377
Corn	322,743	37,651	360,394
Oats	68,688	12,615	81,303
Cattle	84,575	69,920	152,495
Hogs	133,350	62,440	195,790
Sundries (estimated)	50,311	39,567	89,878
Total, 1882	$768,813	$397,424	$1,106,237
Total, 1881	799,324	301,662	1,100,986

"It will be seen that less than 20 per cent. of the gross earnings from freight traffic during the last two years has been received from transporting farm products of all kinds shipped at local stations. The increased traffic of the last year has been derived mainly from increased local shipments resulting from better crops in Missouri, and from through traffic to and from Kansas and other states west of the Missouri River."

Delaware, Lackawanna & Western.

The brief statement which is the only report made by this company gives the following figures for the year ending Dec. 31.

The company owns 207⅙ miles of railroad and a great coal property in Penneylvania. It leases 151 miles of railroad in New Jersey, and leases and controls 311⅙ miles in New York, making 670 miles worked last year. This does not include the New York, Lackawanna & Western, from Binghamton to Buffalo, 204 miles, which has been completed and leased since the close of the fiscal year.

The capital account is as follows, compared with the same account for the previous year:

	1882.	1881.	Inc. or Dec.
Stock	$26,200,000	$26,200,000	....
Bonds	4,044,900	4,044,900	....
Balance due on bonds retired March 1	600,000	1,200,000	D. $600,000
Surplus	8,711,777	7,585,297	I. 1,126,480
Total	$39,556,677	$39,030,197	I. $526,480
Construction	32,072,860	30,873,357	I. 1,199,503
Materials	1,342,820	1,121,850	I. 220,970
Stocks and bonds	5,763,146	6,265,521	D. 502,365
Net balance of current accounts	377,851	769,469	D. 391,618
Total	$39,556,677	$39,030,197	I. $526,480

Additions to construction account were $447,988 for coal lands bought; $570,717 for 18 new engines and 631 cars; $180,798 for second tracks, Nicholson tunnel, etc.

The net balance of current accounts is obtained from the following statement of accounts:

Accounts receivable:		
Cash on hand		$1,175,081.14
Coal on hand (less than market value)		644,272.26
Advances to leased roads		2,133,209.44
Advances on coal to be delivered, etc		1,027,399.60
Coal bills and sundry accounts due		1,473,723.48
Assets N. Y., L. & W. Railway		883,730.46
Total		$7,337,416.38
Less accounts payable:		
Past due dividends, interest and rentals	$102,214.31	
Div., interest and rentals payable after Jan. 1	2,078,717.18	
State taxes payable after Jan. 1	334,867.54	
Dec. pay-rolls, payable in Jan	523,094.83	
Bonds and mortgages	277,525.03	
Unadjusted items, N. Y. Lack. & W	737,474.78	
Vouchers due and payable after Jan. 1	1,235,941.97	
Sundry accounts payable after Jan. 1	1,272,727.36	
Sundry transfer accounts	394,002.13	
		6,959,565.19
Balance		$377,851.25

The advance to leased roads are chiefly payable in stocks and bonds of the lessor companies.

The coal tonnage for the year was 6,444,120 tons, an increase of 1,460,334 tons, or 29.3 per cent. The coal tonnage for eight years has been as follows:

1882	6,444,120	1878	2,643,544
1881	4,983,786	1877	2,369,880
1880	4,160,922	1876	2,400,104
1879	4,487,911	1875	3,404,242

The coal tonnage was the largest ever reported, and was more than twice that of 1878, 1877 or 1876. The increase last year was extraordinary, in view of the general situation of the anthracite coal trade.

The comparative statement of earnings and expenses is as follows:

	1882.	1881.	Inc. or Dec.	P. c.
Earnings	$27,006,267	$27,396,526	D. $390,259	1.4
Expenses	20,163,078	19,632,672	I. 530,406	2.7
Net earnings	$6,843,189	$7,763,854	I. $920,662	11.8
Interest and rentals	3,620,709	3,558,494	D. 62,215	1.7
Surplus	$3,222,480	$4,205,360	D. $982,880	23.4

Earnings include receipts from coal, railroads and all other sources. Expenses last year included 9 locomotives and 866 new cars, costing in all $604,108, and new tracks and buildings, costing $326,992.

The surplus was last year equal to 12¼ per cent. on the stock, against 16 per cent. in 1882.

In 1882 there were four dividends paid, each of 2 per cent., making 8 per cent. in all.

Delaware & Hudson Canal Co.

This company owns a great anthracite coal property in Pennsylvania, to which its canal and railroad operations are chiefly auxiliary. It owns the Delaware & Hudson Canal, from Honesdale, Pa., to the Hudson River at Rondout, N. Y., 108 miles, and owns or leases and works the following railroad lines:

	Miles.
Plymouth, Pa., to Nineveh, N. Y.	58.50
Branches and gravity roads	98.25
Cherry Valley, Sharon & Albany	21.00
Schenectady & Duanesburg	13.75
Schenectady & Mechanicsville	19.00
Total owned	210.50
Albany & Susquehanna, leased	142.25
Rensselaer & Saratoga and branches, leased	182.75
New York & Canada, leased and stock owned	150.00
	475.00
Total	685.50

Adding the canal, there are 793.5 miles of transportation lines owned. The company also owns nearly 200 miles of tramways and mine roads in its mines, of which about 150

miles are under ground. The report is for the year ending Dec. 31.

The general balance sheet is as follows:

Liabilities.

Capital stock		$20,000,000.00
Bonds:		
1884	$3,385,000	
1891	5,549,000	
1894	4,829,000	
1917	5,000,000	
		18,763,000.00
Interest and dividends payable Jan., 1883		694,310.00
Depositors		95,348.06
Dividends and interest unclaimed		42,241.01
Notes payable		5,000.00
Surplus		1,488,087.54
Total		$41,087,986.61

Assets.

Canal	$6,339,210.49
Railroad and equipment	6,581,069.72
Real estate	9,044,174.98
Mine improvements	2,388,709.02
Mine fixtures and equipments	362,527.56
Boats, barges and steamboats	575,486.18
Coal yards and fixtures	107,698.84
Lackawanna & Susquehanna R. R.	1,022,938.15
Cherry Valley, Sharon & Albany R. R	300,000.00
New York & Canada R. R.	3,597,074.48
Lackawanna Palace Car Co.	54,675.36
Mechanicsville & Fort Edward R. R.	48,295.86
Schenectady & Mechanicsville R. R.	210,922.48
Double-track Albany & Susquehanna	1,008,786.63
Telegraph lines	14,734.80
Supplies on hand	1,408,449.39
Coal on hand	492,924.09
Advances to leased lines	637,604.56
Miscellaneous assets	1,850,537.88
Stocks	1,807,890.84
Advances on coal royalties	625,072.70
Cash and demand loan	1,553,414.96
Bills and accounts receivable	1,055,787.64
Total	$41,087,986.61

Miscellaneous assets include $85,000 Jefferson Railroad bonds and $1,701,000 Albany & Susquehanna consolidated bonds. Stocks include $854,000 Albany & Susquehanna and $824,100 Rensselaer & Saratoga stocks.

The bonded debt was reduced $80,000 during the year. The Schenectady & Mechanicsville road was added to the railroad owned during the year.

The coal statement for the year is as follows:

	1882.	1881.	Inc. or Dec.	P.c.
Coal produced from Co.'s mines	3,203,168	3,211,496	D. 8,328	0.3
Coal transported for others	516,154	450,296	I. 65,858	14.6
Total tons	3,719,322	3,661,792	I. 57,530	1.5

The small reduction in the amount produced was the result of the half time system prevailing during a part of the year.

The operations of the leased lines, 475 miles, were as follows:

	1882.	1881.	Inc. or Dec.	P. c.
Passengers	$1,628,297	$1,365,867	I. $262,430	19.2
Freight	3,428,132	3,170,903	I. 257,229	8.1
Miscellaneous	66,787	62,156	I. 3,631	7.5
Total	$5,123,216	$4,598,926	I. $524,290	11.4
Expenses	3,335,423	2,823,420	I. 512,003	18.2
Net earnings	$1,787,793	$1,775,506	I. $12,287	0.7
Interest and rentals	1,779,327	1,749,323	I. 30,004	1.7
Net profit	$8,466	$26,183	D. $17,717	68.1
Gross earn. per mile	10,786	9,682	I. 1,104	11.4
Net " " "	3,764	3,738	I. 26	68.1
Per cent. of exps	65.10	61.39	I. 3.71	....

The business of these lines shows a large increase, but it was nearly equaled by the increase in expenses, leaving the net earnings but little greater than in 1881.

The profit and loss account for the year is as follows:

Sales of coal to Dec. 31, 1882	$8,993,540.17
Canal tolls	60,007.52
Net earnings Pennsylvania railroads	812,454.57
Interest on investments	249,496.73
Miscellaneous profits	187,363.23
Profit on leased lines	8,465.58
Coal on hand Dec. 31, 1882, tons, 219,255	492,924.09
Total	$10,804,251.89
Coal on hand Dec. 31, 1881, tons, 169,883	345,075.03
Mining coal	4,422,243.01
Transportation expenses, canal, etc	1,680,192.44
Transportation to tidewater *via* Erie R. R.	666,796.82
Rondout expenses	131,904.10
Taxes	221,991.84
Salaries, rent and miscellaneous and law expenses.	137,141.49
Weehawken expenses	48,623.29
Interest	1,312,082.62
Total	$8,966,050.64
Balance, being profit for the year	$1,838,201.25

No separate statement of the gross earnings of the railroad lines owned in Pennsylvania is given.

Another statement of the business of the year is as follows:

	1882.	1881.	Inc. or Dec.	P. c.
Gross receipts	$15,573,927	$14,920,007	I. $644.920	4.3
Expenses	10,422,324	9,481,729	I. 940,595	9.9
Net earnings	$5,151,603	$5,447,278	D. $265,675	5.4
Taxes, interest and rentals	3,313,402	3,344,814	D. 31,412	0.9
Surplus	$1,838,201	$2,102,464	D. $264,263	12.6

The surplus was equivalent to 9.19 per cent. on the stock in 1882, against 10.05 per cent. in 1881.

President Dickson's report says: "Under the policy of restriction, the mines were closed 48 days during the year, and a nearly uniform price for coal was maintained.

"There was a large increase in the gross earnings of the railroads. Owing, however, to unusual expenditures on the permanent way, the expenses were likewise larger; 3,916 tons of steel rails and 431,500 ties have been placed in the tracks, which are now in first-class condition.

"Notwithstanding this large expenditure, the lines have been self-sustaining. The great advantage of the possession of the leased lines is evidenced by the fact that the total tonnage and sales upon them and their branches in 1872 was only 116,283 tons, while in 1882 they were 750,855 tons, the profits upon which are added to the revenues of the company, and there is every reason to believe that the future will show a further increase.

"To meet the increased business on the Albany & Susquehanna road, that portion of it between Quaker Street and Nineveh (93 miles), is being double tracked. Eighteen miles, making a total of 50 miles, were completed during the year. There has also been added to equipment in 1882, 12 locomotives, 9 passenger cars, and 1,000 coal and box cars.

"The finances of the company continue to be in a satisfactory condition.

"It must be noted, however, that the bonds of 1884 fall due in July of that year. In accordance with the resolution of stockholders at their last meeting in reference to the retirement of bonds, the following plan for their redemption is suggested by your managers, and will be submitted to the stockholders at the annual meeting in May.

"This plan proposes an increase of the capital stock to $30,000,000, such increase to be offered to the stockholders *pro rata* at par, and with the condition that, if authorized, it shall be used only to retire bonds as they mature: that is to say, $3,500,000 to be issued in 1884, $1,000,000 to be issued in 1887, and $5,500,000 in 1891.

"Under this plan, the bonded debt of the company will be reduced to $10,000,000, and as the rate of interest now paid upon the bonds to be retired is 7 per cent., it follows that such charge will be appropriated to dividends upon the stock, so greatly adding to its investment value, and at the same time strengthening the financial position of the company."

Northern Central.

This company owns a line from Baltimore north to Sunbury, Pa., 138 miles, with a branch from Relay House to Green Spring, Md., 9 miles. It leases the Shamokin Valley & Pottsville road, Sunbury, Pa., to Mt. Carmel, 28 miles; the Williamsport & Elmira, 78 miles; the Chemung, 22 miles, and the Elmira & Canandaigua, 47 miles, these three roads forming a line from Williamsport, Pa., to Canandaigua, N. Y., 147 miles. The total is 147 miles owned and 322 worked. Its trains use the Philadelphia & Erie track from Sunbury to Williamsport, 40 miles, and the Philadelphia & Erie trains use its track from Sunbury to Marysville, 47 miles. The report is for the year ending Dec. 31.

The company also owns the stock of the Union Railroad, which connects its station in Baltimore with the wharves at Canton and the Philadelphia, Wilmington & Baltimore and the Baltimore & Potomac roads.

The general account is as follows:

Stock		$8,500,000.00
Maryland state loan, irredeemable, 6 per cent		1,500,000.00
Funded debt		13,879,000.00
Mortgages and ground rents		440,812.33
Accounts and balances		1,632,623.34
Depreciation fund, coal lands, Shamokin Div		114,158.83
Profit and loss		439,396.90
Total		$24,505,991.40
Road and equipment	$18,029,911.64	
Mortgages and ground rents	9,752.33	
Stock of leased lines	3,048,680.82	
Trustees of sinking fund	438,022.26	
Materials	386,490.18	
Accounts, balances, etc	2,058,831.23	
Cash	534,302.94	
		24,505,991.40

Stock was increased $658,000 during the year, as explained below. The bonded debt was reduced $146,000 by the sinking funds. The funded debt consists of $1,490,000 bonds of 1885; $1,126,000 coupon bonds due 1900; $2,804,000 general mortgage bonds due 1900, and $4,558,000 consolidated general mortgage bonds due 1904. The interest on all these bonds is 6 per cent., and there are also $3,901,000 second general mortgage 5 per cent. bonds, due 1926. The interest charge, including the Maryland loan, is $883,730 yearly.

The earnings for the year were as follows:

	1882.	1881.	Inc. or Dec.	P. c.
Freight	$4,507,099	$4,396,187	I. $110,912	2.5
Passengers	885,789	808,554	I. 77,235	9.5
Mail and express	132,309	122,960	I. 9,349	7.6
Miscellaneous	274,979	115,999	I. 158,980	137.1
Total	$5,800,176	$5,443,700	I. $356,476	6.5
Expenses	3,842,323	3,787,446	I. 54,877	1.4
Net earnings	$1,957,853	$1,656,254	I. $301,599	18.2
Gross earn. p. mile	18,013	16,906	I. 1,107	6.5
Net earn. p. mile	6.080	5,144	I. 936	18.2
Per cent. of exps	66.24	69.57	D. 3.33	....

The gross earnings per mile of the several divisions were as follows: Main Line, $28,143; Green Spring Branch, $859; Shamokin Division, $16,736; Elmira Division, $11,214; Chemung Division, $8,597; Canandaigua Division, $7,888; general average, $18,013 per mile. The earnings for 1882 were the largest ever reported.

The income and profit and loss account was as follows:

Net earnings, as above		$1,957,852.98
Dividends and interest received		203,156.62
Royalty on coal mined, Shamokin Division		80,812.66
Total		$2,241,822.26
Interest paid on bonds	$880,875.00	
Interest on car trusts, ground rents, etc.	129,000.03	
Rentals	465,387.96	
One-half surplus from Elmira, Chemung and Canandaigua divs., paid Penna. R. R. Co	37,141.67	
		1,512,404.66
Surplus for the year		$729,417.60
Dividends paid, 7 per cent		444,272.00
Balance to profit and loss		$285,145.60
Profit from sale of securities		43,912.00
Profit and loss, balance, Jan. 1, 1882		305,696.75
Total		$634,754.35
Bonus paid for conversion of bonds	$150,000.00	
Old tax claims paid	45,357.45	
		195,357.45
Profit and loss, balance Dec. 31, 1882		$439,396.90

Two dividends were paid, one of 3 and one of 4 per cent., making 7 per cent. in all. The cost of road and equipment was increased $509,091.41 during the year.

The traffic for the year was as follows:

	1882.	1881.	Inc. or Dec.	P.c.
Passengers carried	2,590,582	2,430,162	I. 160,420	6.6
Passenger-miles	36,727,734	34,370,948	I. 2,356,786	6.9
Tons freight carried	11,057,355	10,527,506	I. 529,649	5.0
Ton-miles	502,363,768	506,180,310	D. 3,816,532	0.8
Average receipt:				
Per passenger-mile	2.412 cts.	2.352 cts.	I. 0.060 ct.	2.6
Per pass.-mile net	0.244 "	0.185 "	I. 0.059 "	31.9
Per ton-mile	0.897 "	0.869 "	I. 0.028 "	3.2
" " net	0.291 "	0.268 "	I. 0.023 "	8.6

The highest receipt per passenger mile was on the Shamokin Division, 2.735 cents; the lowest, on the Chemung Division, 1.894 cents. The largest net receipts per passenger mile was on the Elmira Division, 0.785 cent. On the Green Spring Branch there was a loss of 2.983 cents per passenger mile. The receipt on the Main Line was 2.432 cents gross and 0.060 cent net.

The earnings, expenses and profit per ton-mile on the several divisions were as follows, in cents:

	1882.			1881.		
	Earn.	Exps.	Profit.	Earn.	Exps.	Profit.
Main Line	0.973	0.683	0.290	0.903	0.673	0.230
Green Spring Br.	3.012	1.844	1.168	3.171	1.755	1.416
Shamokin Div.	1.197	0 415	0.782	1.335	0.478	0.857
Elmira Div.	0 717	0.514	0.203	0.725	0.507	0.218
Chemung Div.	0.530	0.419	0.111	0.540	0.381	0.159
Canandaigua Div.	0.725	0.546	0.179	0.725	0.528	0.197
Whole line	0.897	0.606	0.291	0.869	0.601	0.268

The improvement in rates was entirely on the Main Line, the other divisions showing a decrease.

The report says: "The coal tonnage of the Main Line in 1881 was 1,555,045 tons, and in 1882, 1,736,196 tons. There was an increase in trade going to the Pennsylvania Railroad at Marysville of 112,813 tons. There was an increase of 3,619 tons to points on the Cumberland Valley road. The total tonnage to Baltimore was 488,793 tons, an crease of 30,068 tons in 1882.

"The coal tonnage of the Shamokin Division in 1882 was 1,228,808 tons; in 1881, 1,147,781 tons, showing an in crease of 81,027 tons.

"The coal tonnage of the Elmira Division in 1882 was 1,058,887 tons, and in 1881, 1,012,617 tons, an increase of 46,270 tons. The decrease from the McIntyre mines near Ralston was 27,805 tons. In the north-bound anthracite trade there was an increase of 5,185 tons.

"The coal tonnage of the Chemung Division was increased from 717.214 tons in 1881 to 724,806 tons in 1882, a gain of 7,592 tons.

On the Canandaigua Division the coal tonnage of 1881 was 639,732 tons; in 1882, 639,532 tons, a decrease of 200 tons. There was an increase of 8,851 tons in shipments to Coal Point, at Watkins, N. Y., and a decrease of 9,051 tons in shipments to other stations.

"On the Green Spring Branch the coal tonnage of 1881 was 4,574 tons; in 1882, 4,202 tons, a decrease of 372 tons.

"The increase in the bituminous coal tonnage from the Tioga & Elmira State Line Railroad destined to points north of Elmira, as compared with the previous year, was 17,048 net tons, the increase in revenue from this source being $2,270.01. The aggregate movement of bituminous coal was 1,141.891 tons, an increase of 156,523 tons, principally from the Snow Shoe and Blossburg regions to points in New York and New England, and from the Clearfield region to points south.

"The tonnage of both classes amounted to 3,218,002 tons as against 2,900,707 for the preceding year, being an increase of 317,295 tons in the actual aggregate of coal transported, irrespective of the number of divisions over which it was moved. The main items of tonnage, beside coal and grain, were lumber, iron ore, manufactures of iron and petroleum.

"The amount of grain carried over your lines show a large decrease as compared with the preceding year, due mainly to the falling off in the foreign demand. There were carried over your lines to Baltimore, in 1882, 10,332,853 bushels of grain; in 1881, 17,011,677 bushels, a decrease of 7,578,824 bushels, or 42.3 per cent.

"Real estate account was increased $513,091.51 during the year, the details of which are shown by the following statement:

Property purchased		$116,031.41
Amount of mortgages and ground rents capitalized		440,812.33
Total		$556,843.74
Less property sold	$34,000.00	
Mortgages and ground rents receivable capitalized	9,752.33	
		43,752.33
Net increase in real estate account		$513,091.41

"The various mortgages and ground rents, for which your company had become liable in the purchases of property heretofore made, have, as stated above, been capitalized and the amount thereof—$440,812.33—charged to real estate account, and credited to mortgages and ground rents payable. It was thought wiser to state the account in this form, as it shows directly the entire obligations of the company for such purchases, and also the full value of the real estate acquired.

"In accordance with the announcement made in your last annual report, your board purchased at par the entire share capital of the Union Railroad Co., of Baltimore, costing $600,000. Under the terms of the contract only a portion of the amount was required to be paid in cash, but it was deemed advisable to anticipate the payment of the notes given for the balance of the purchase-money, all of which have now been paid.

"To provide the means therefor, and in accordance with the authority given at your last annual meeting, the share capital was increased during the past year from $5,842,000 to $6,500,000. The stockholders having been offered the privilege of subscribing for 10 per cent. of their holdings at par, availed themselves thereof to the extent of 6,008 shares leaving 7,152 shares in your treasury, which were sold at $56 a share, yielding a profit of $42,912 to be carried to the credit of profit and loss.

"The Union Railroad was transferred to the management of your company, March 1, 1882, and its acquisition has proved even more valuable to your interests than was anticipated, and you cannot be too strongly congratulated on securing its control.

"During the past year a connecting line was built between your road at Dauphin and the Pennsylvania Railroad at Rockville at a cost of $175,000, the funds for which were provided by the Pennsylvania Railroad Co. and a contract made between the two companies by which your company operates the line for a fixed compensation. A direct connection is thus secured with the lines of the Pennsylvania Railroad on the east bank of the Susquehanna River, and an alternate connection is also obtained with your road west of the river by the use of the double-track iron bridge of the Pennsylvania Railroad located at Rockville.

"It will be noted from the income account that the gross earnings of the line were increased 6.55 per cent., and that the expenses were increased 1.45 per cent., making an increase in net earnings of $301,598.89. It is proper to state that the following amounts, which may be classified as extraordinary expenses, have been included in the regular operating expenses, and form a part of the cost per ton per mile, and per passenger per mile as shown in the foregoing tables:

New freight cars	$192,449.60
New locomotives	119,438.22
New tracks, etc., Baltimore and Canton	35,919.05
Extension second and third tracks, sidings, crossings and stations on the line of the road	108,324.03
Total	$456,130.90

"These extraordinary outlays have brought your equipment up to the full standard that the character of your properties would seem to demand. The small engines and four-wheel coal cars unsuited to your traffic, which had been carried upon your books at figures beyond their real value, have been disposed of, and engines and cars of the full standard character and value substituted therefor; so that at the close of 1882 there were no vacant numbers in any class of the equipment. The condition of your road-bed has also been fully maintained.

"By reference to the income account, it will also be seen that your lines north of Williamsport continue to show gratifying results, the net profit to your company from their operation having been $37,141.67. Your company was not required during the past year to make any payment on account of its indorsement of the bonds of the Baltimore & Potomac Railroad Co., as that road earned a sufficient sum to more than meet the interest on the same."

During the year the sum of $89,110 was paid into the sinking fund and $89,000 general mortgage bonds were redeemed. The trustees now hold $430,000 bonds of the company.

The securities in the insurance fund amount to $124,000. Payments to the fund last year were $28,842.93, and payments from the fund $28,177.76, leaving a cash balance of $665.17 at the close of the year.

RAILROAD GAZETTE

Published Every Friday.

CONDUCTED BY

S. WRIGHT DUNNING AND M. N. FORNEY.

EDITORIAL ANNOUNCEMENTS.

Passes.—*All persons connected with this paper are forbidden to ask for passes under any circumstances, and we will be thankful to have any act of the kind reported to this office.*

Addresses.—*Business letters should be addressed and drafts made payable to* THE RAILROAD GAZETTE. *Communications for the attention of the Editors should be addressed* EDITOR RAILROAD GAZETTE.

Contributions.—*Subscribers and others will materially assist us in making our news accurate and complete if they will send us early information of events which take place under their observation, such as changes in railroad officers, organizations and changes of companies, the letting progress and completion of contracts for new works or important improvements of old ones, experiments in the construction of roads and machinery and in their management, particulars as to the business of railroads, and suggestions as to its improvement. Discussions of subject pertaining to* ALL DEPARTMENTS *of railroad business by men practically acquainted with them are especially desired. Officers will oblige us by forwarding early copies of notices of meetings, elections, appointments, and especially annual reports, some notice of all of which will be published*

Advertisements.—*We wish it distinctly understood that we will entertain no proposition to publish anything in this journal for pay,* EXCEPT IN THE ADVERTISING COLUMNS *We give in our editorial columns* OUR OWN *opinions, and those only, and in our news columns present only such matter as we consider interesting and important to our readers. Those who wish to recommend their inventions, machinery, supplies, financial schemes, etc., to our readers can do so fully in our advertising columns, but it is useless to ask us to recommend them editorially, either for money or in consideration of advertising patronage.*

CHICAGO RECEIPTS AND NORTHWESTERN PRODUCTION.

The whole country is greatly concerned in the progress of the West—of that newer part of the country which produces our chief exports, grows rapidly, and thus gives occasion for the growth of non-agricultural industries that prevail further east, and which depend almost exclusively upon the home demand, not being able to export their products. The railroads—all those north of the Ohio, at least—are especially interested in this growth, on which their own largely depends. The larger part of the newer railroads are in the West, and many of them depend on its growth for support, as a very considerable number are built where the existing traffic is not sufficient to support them. We therefore examine with care whatever data enable us to trace the course of population and production there—and especially its agricultural production, on which almost all other depends.

Among the most valuable data are the receipts and shipments of the city of Chicago in successive years, as it receives produce from and send merchandise to nearly the whole of the country west of it, and reflects the condition of the West as a whole much better than any other one place, and probably better than all other places combined, as it receives more farm produce from the country west of Indiana and Lake Michigan than all the other western cities.

The receipts of grain and flour are the most important, and next to these the receipts of animals. Together these make up so large a proportion of the farm products marketed, that the course of them from year to year represents very closely the varying surplus of production over home consumption in the West.

The flour and grain receipts of Chicago for the last ten years have been as follows, in bushels :

Chicago Flour and Grain Receipts for Ten Years.

Year.	Flour, bbls.	Wheat, bu.	Corn, bu.	Oats, bu.	Total, bu.
1873	2,487,376	26,266,562	38,157,232	17,888,724	98,935,413
1874	2,666,679	29,764,822	35,799,638	13,901,235	95,611,713
1875	2,625,883	24,206,370	28,341,150	12,916,428	81,087,302
1876	2,955,197	16,574,058	48,668,640	13,030,121	97,735,482
1877	2,691,142	14,164,515	47,915,728	13,506,773	94,416,399
1878	3,030,562	29,713,577	63,651,518	18,839,297	134,086,595
1879	3,369,958	34,106,109	64,339,321	16,660,428	137,704,571
1880	3,215,389	23,541,607	97,272,844	23,490,915	165,855,370
1881	4,815,239	14,824,990	78,393,315	24,861,538	145,020,829
1882	4,378,824	22,326,148	49,224,522	26,975,147	127,772,996

The last column includes not only the sum of the others, with flour reduced to bushels, but also the rye and barley receipts, which we have not given separately. The largest barley receipts were 7,440,000 bushels in 1882; the largest rye receipts 2,479,000 bushels in 1879.

Taking this last column first, as representing the total grain business in Chicago, we find that its receipts in 1882 were *less than in any previous year since* 1877. We see that the business was almost stationary during the five years previous to 1878; if we go back still further we shall find that there was but little increase from 1871 to 1877, and little from 1861 to 1871.

The growth in grain receipts seems to have been, not gradually, but by sudden leaps at considerable intervals. Thus, since 1860 the course has been :

Receipts in 1860	37,200,000 bu.
" " 1861	53,400,000 "
Average receipts 1861 to 1870	59,600,000 "
Receipts in 1870	60,400,000 "
" " 1871	83,500,000 "
Average receipts 1871 to 1877	91,400,000 "
Receipts in 1877	94,400,000 "

There was an increase of nearly 100 per cent. in the receipts from 1859 to 1860; another increase of 43 per cent. from 1860 to 1861; but then for ten years there was comparatively little change; but from 1870 to 1871 there was another sudden increase of nearly 40 per cent., amounting to 23,000,000 bushels, and then again a period of seven years of little change. The course from 1877 was upward rapidly for three years, the increase being about 40,000,000 bushels from 1877 to 1878; only 3 millions from 1878 to 1879, and then 28 millions from 1879 to 1880, making a gain of more than 71 millions, or 75 per cent., from 1877 to 1880. But since 1880 there has been what has never been known at Chicago before, a *great* decrease in grain receipts. Not that there never before had been a decrease from one year to the next, but there had been none so important. The largest previously was 14½ millions, from 1874 to 1875. No other had been more than 8 millions.

Of course a decrease of 38,000,000 bushels, or 23 per cent., in the chief traffic of this great traffic centre within two years is an important matter. If it were due to a change in the course of the grain business it might, taken in connection with the great extension of railroads in the territory which sends grain to Chicago, indicate the near approach of disaster—a great multiplication of lines at the same time with a reduction of traffic for them to carry. That doubtless was the case last year; but it was due chiefly not to a reduction in the area devoted to production but to the failure of the crops in 1881. It should be borne in mind, however, that the area under cultivation has not been greatly extended lately, even in the territory tributary to Chicago; and this is a serious matter, because there has been there and elsewhere a great extension of the other industries which depend upon the agriculture of this district. And the fact that parts of Minnesota and Dakota have been settled very rapidly of late does not change the situation: all their growth is but a trifle to the area under cultivation in the older Western states, and may readily be balanced by a slackening of the rate of growth in Iowa, Nebraska, Kansas and further east.

The movement of grain may be modified greatly by the amount of stock raised by the grain growers. Every addition to the number of hogs raised reduces the amount of corn which the farmer can market. Large quantities of corn, too, are used for fattening cattle, and with the increase in the number of horses which follows the expansion of non-agricultural industries, and the growth of towns, the home consumption of oats and corn increases. Of the latter there can be no doubt: the towns of the West consume for the food of animals, as well as man, a great deal more grain than a few years ago; but if we find the farmers greatly increasing their sales of hogs and cattle, we cannot safely conclude that there has been a reduction in the surplus production of the West—the produce which it has to exchange with the rest of the world. We need therefore to examine the course of the receipts of cattle and hogs, as well as of grain, in order to be sure as to production of grain—of corn at least.

The Chicago receipts of cattle, hogs and sheep, which are the chief farm products other than grain and flour received at Chicago, have been, for ten years :

	Cattle.	Hogs.	Sheep.
1873	761,428	4,570,906	.....
1874	843,966	4,472,667	.....
1875	920,843	4,085,122	.....
1876	1,096,745	4,338,628	364,095
1877	1,033,151	4,190,309	310,240
1878	1,083,068	6,442,166	310,420
1879	1,215,732	6,539,344	325,119
1880	1,382,417	7,148,457	335,810
1881	1,498,550	6,527,679	493,624
1882	1,586,885	5,869,807	629,327

There has been hardly any interruption to the increase in the cattle receipts, which was to be expected in view of the rapid occupation of the plains country west of the 100th meridian for grazing. Since 1878 the increase is 46½ per cent., and in 1882, when there was so large a decrease in grain and hogs, the receipts were 6 per cent. more than in 1881. But the hog receipts, which were almost stationary during the five years from 1873 to 1877, and which suddenly jumped 54 per cent. from 1877 to 1878, and in 1880 were 70 per cent. more than in 1877, in 1881 were 9 per cent. and in 1882 18 per cent. less than in 1880. On the average, perhaps, 3 sheep = 1 hog, and 2½ hogs = 1 head of cattle. At that rate the increase of cattle and sheep in 1882 over 1881 would lack 1,076,057 of making good the decrease of 1,342,128 in the number of hogs received, and there was a decrease of 10⅔ per cent. in the total live stock receipts. Hogs, too, are the chief consumers of the farmers' corn.

In the other farm products, which are of much less importance, the reports show generally less receipts in 1882 than in 1881, though most of the changes are not great—a decrease of 3 per cent. in butter, of 10 per cent. in hides, of 19 per cent. in wool, but an increase of 19 per cent. in seeds and of 11 per cent. in hay. The Chicago *Tribune* states the aggregate *volume* of agricultural produce received during the year as 13½ per cent. less than the receipts of 1881, and their *value* as 4 per cent. greater.

In the shipments of goods from Chicago to the farming country, however, there was an increase in many items—7⅔ per cent. in lumber (much the heaviest of all) and 36½ per cent. in salt. The *Tribune* reports an increase of 8 per cent. in quantity of dry goods sold, of 18 per cent. in iron manufactures, but a decrease of 10 per cent. in groceries. The manufactures of the city it gives as 5 per cent. greater than in 1881.

As 1881 was an exceptionally bad year for crops, the unfavorable comparison with it is not of itself especially significant, but the decrease in Chicago receipts began earlier. Corn is marketed chiefly in the calendar year succeeding that in which it is grown. Thus the 97 million bushels received in Chicago in 1880 were from the crop of 1879; the 78 millions received in 1881, from the crop of 1880. Now there was no increase in hog receipts in 1881 to balance this decrease of 19 million bushels (20 per cent.) in corn, but on the contrary a decrease of 620,000 head (nearly 9 per cent.). Neither has there been any great diversion of any traffic from Chicago to other Western cities.

The question arises whether the decrease in receipts since 1880 has been due to a decrease of Western production or to an increase of Western consumption. As to the latter there can be no doubt. The West has been growing rapidly, as might be known by the sales of lumber and merchandise if by nothing else. There has been an enormous amount of building and of railroad construction, requiring the labor of a great many men. The farming population of the older Western states has probably not grown at all, but the town population has grown enormously. Thus there must have been a considerable increase in the consumption of grain and provisions in the country west of Chicago, which is generally (but mistakenly) regarded as purely agricultural. This of course has reduced the exportable surplus, and will account for some of the decrease in Western receipts, which if so caused is entirely compatible with an increase in production.

It is this latter which it most concerns us to learn, and for this reason we cite the crops of wheat, corn and oats in the states west of Lake Michigan and Indiana (including Kansas and Nebraska, but not Dakota) for the last four years, as given by the census for 1879 and by the Department of Agriculture thereafter. From this territory, together with Dakota, come substantially the whole of the grain and flour receipts not only of Chicago, but of Milwaukee, Peoria and St. Louis.

The Department, unfortunately, does not report Dakota separately, but its omission is of less importance than may be supposed. Dakota *with all the other territories* produced 19,000,000 bushels of these grains in 1879 and 34,000,000 in 1882. Probably as much as 10,000,000 bushels of the total increase was in Dakota (there was an increase of two or three millions in Washington, probably), but they will make so little difference in the totals that the omission is not important.

The production of the territory described (Illinois Wisconsin, Minnesota, Iowa, Nebraska, Missouri and Kansas) for the last four years has been reported as follows, in bushels :

	1879.	1880.	1881.	1882.
Wheat...	245,112,000	214,009,000	153,157,000	210,700,000
Corn ...	1,139,026,000	876,080,000	623,673,000	824,121,000
Oats.....	221,094,000	204,015,000	202,005,000	259,994,000
Total..	1,605,232,000	1,295,004,000	978,835,000	1,294,815,000

If the Department's estimates are correct, then, though the crop of 1882 is indeed nearly one-third greater than that of 1881, it is no larger than that of 1880, and is 310 millions (19 per cent.) less than that of 1879, as reported by the census. The census year was doubtless the most productive year; but the decrease in 1880 and 1882 was due less to a lower average yield per acre than to the diversion from corn to wheat. The average yield of corn per acre is more than twice as great as that of wheat. With the ordinary yield of this district, the aggregate product of 2,000 acres of corn and 1,000 of wheat would be about 73,500 bushels; the same ground with the same yield per acre, but

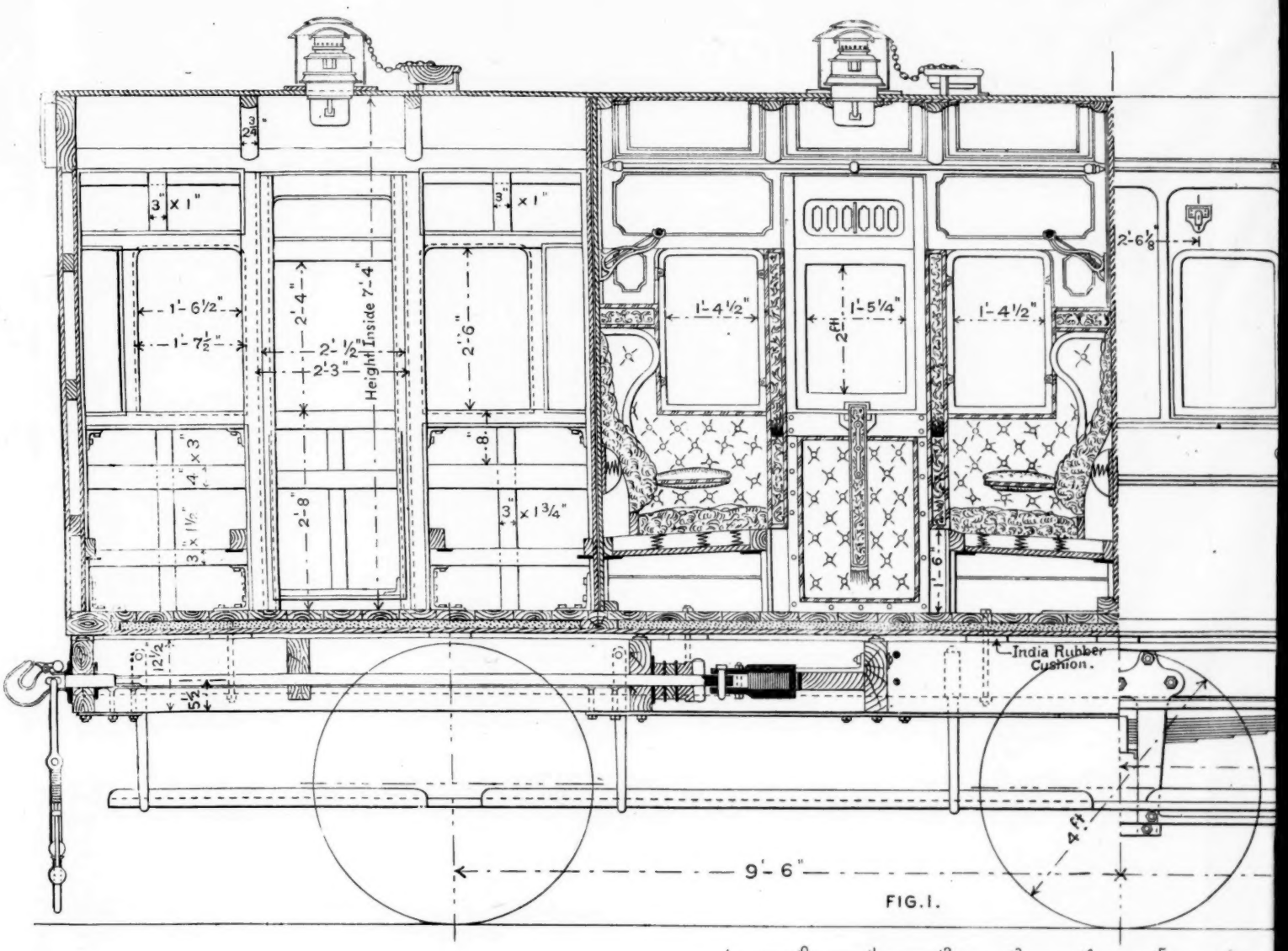


FIG. 1.

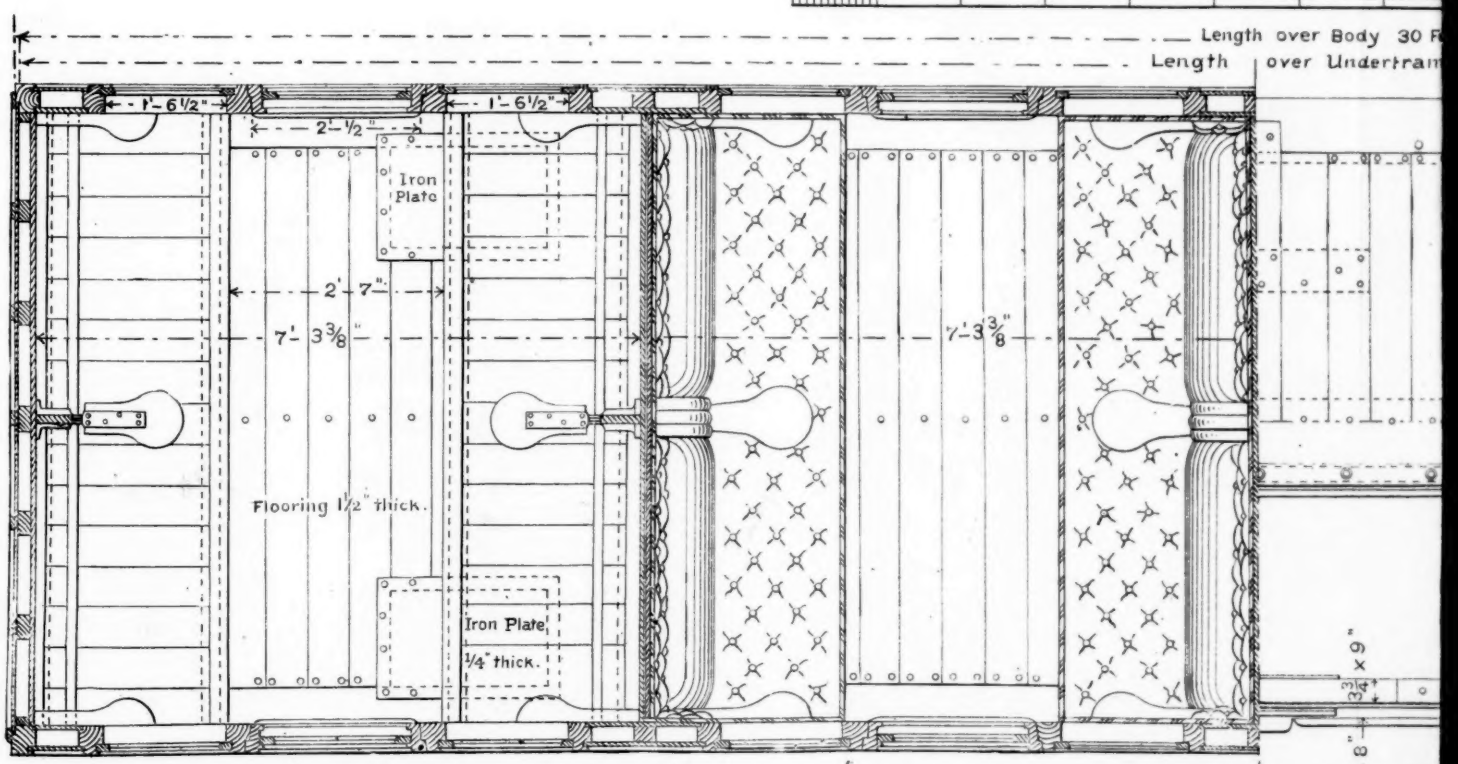
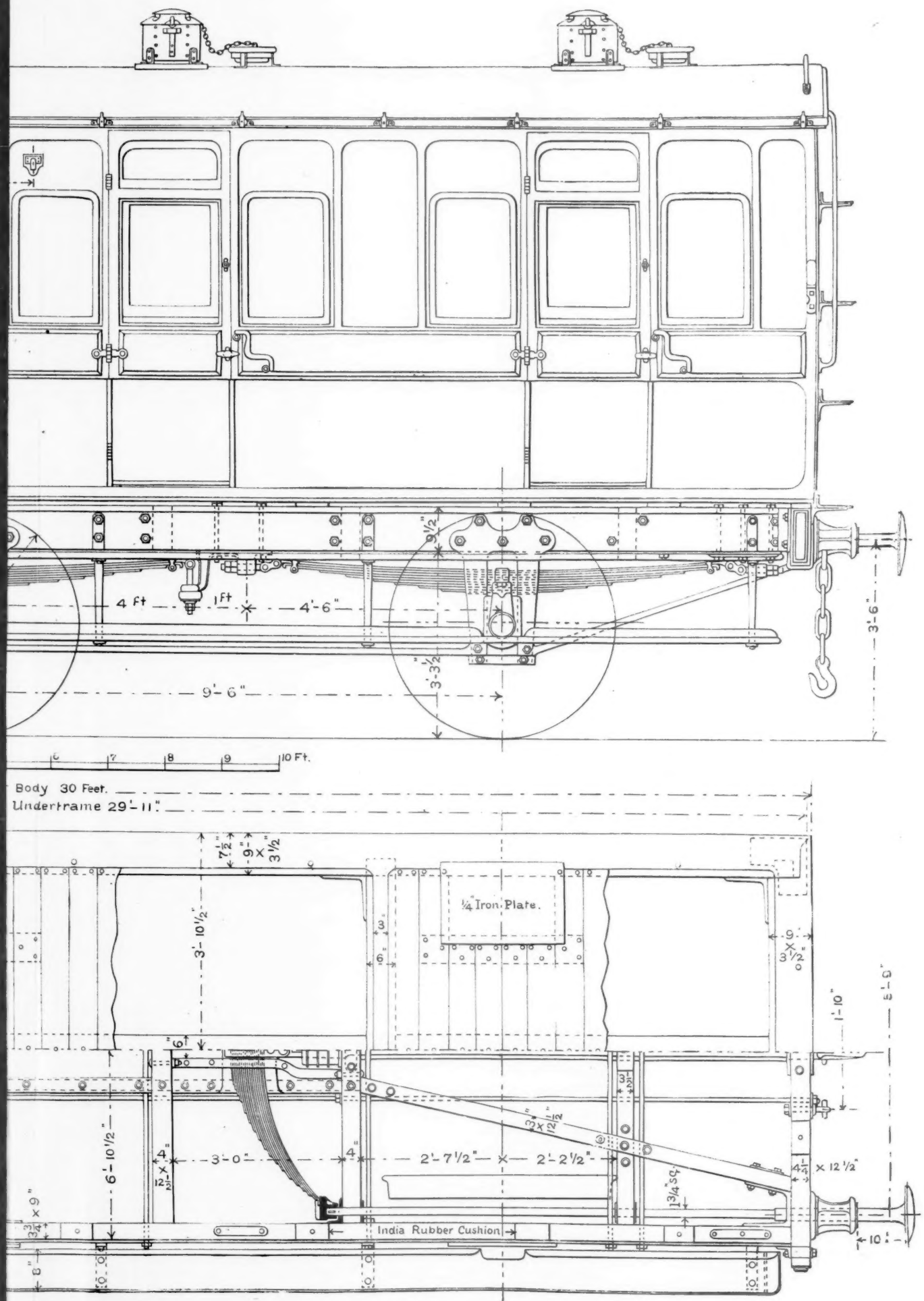


FIG. 2.

FIRST-CLASS ENGLISH RAILWAY

(For Description see page 110)



RAILWAY CARRIAGE

(see page 119)

with 2,000 acres in wheat and 1,000 in corn, would produce but 57,000 bushels.

With the larger population and consumption of the West, then, we may not expect from the crop of 1882 so large shipments to Eastern markets as from the equally large crop of 1880—not to say the much larger crop of 1879. They will, however, be larger than would be possible otherwise, because of the reduction in the number of hogs, as indicated by the packing in the Northwest since October. The chief part of the corn is consumed on the farm by these and other animals, and a moderate reduction in their number reduces materially the home consumption, of course. But this does not mend the matter, so far the total agricultural production is concerned. It is the slow growth of that, and not of any one branch of it, which should make us reflect. With the great growth of population in the West, and the thousands of miles of new railroads built there, a large and steady production does not suffice; there must be growth or disaster. With the reported production of 1882, the West will have considerably less produce to export in 1883 than in 1881, much less than in 1880 (from the crops of the previous years); but it has more merchants and manufacturers and railroads to support. There are, however, some manufacturing industries in the West which do not depend upon the West for support, as notably the flour mills, tanneries and to some extent the breweries, and a very large part of its industries do not depend upon *immediate* production for support, but may have a great market while crops are small, because their produce is largely consumed in the establishment of enterprises to increase production in the future. Every new settler makes a demand on the saw-mills and manufacturers of agricultural implements, etc., and for a year or more he produces substantially nothing to export. His whole energies and capital are devoted to making a new productive machine—a farm which in a short time, but not immediately, will afford new traffic. Thus, besides the agricultural production of the West we have the capital and labor imported into it creating a demand for its non-agricultural industries and those of other parts of the country. Doubtless it has been this which has made general trade and west-bound traffic so good as they have been in the last two years—marvelously good in view of the production and shipments of farm produce. And so far as the imported capital and labor have been devoted to extending the area under cultivation, we shall surely see the effect of it soon. Much less than is generally supposed has taken this direction. But if the other industries have not been expanded beyond the capacity of the West to take their produce, there may be healthy growth and great prosperity without increase in its *exports* of farm produce, though not without increase in its production. It will simply be supplying itself with goods which it formerly imported, and finding a market within its own borders which formerly it had to seek in the East and in Europe. This process has been going on ever since the Northwest was first settled, it is true, but usually not so fast but that it could increase its exports of produce from year to year. Of late the indications are that the consumption of farm produce in this part of the country has been growing as fast as its production—considerably faster since 1879 if there is any trust to be placed on the crop reports of the Department of Agriculture, which we find confirmed by statistics of the Northwestern hog and grain movement, like those given above.

MECHANICAL DRAWING.

In a recent discussion of the question of technical education, a gentleman who is now the head of a large machine shop remarked that nothing which he ever learned was as useful to him as drawing, both before and since he had become a manager of engineering works. During the days that he was an employé, he found it a resource that could be always turned to account, and since then his success as a constructor of machinery had been largely due to his knowledge of drawing.

Considering its usefulness, it is somewhat surprising how few mechanics in this country know anything about it. Within the last few years the demand for good mechanical draftsmen has been in excess of the supply, and any man of fair skill could command good wages. It is safe to say that a large majority of the engineering and mechanical draftsmen in this country are foreigners, principally Germans, Swedes and English. Very few American mechanics ever learn to draw, and, in fact, there are very few opportunities afforded to mechanics in most places in this country to learn drawing. A thoroughly good elementary book on the subject, which could be placed in the hands of young mechanics and from which they could instruct themselves, is much needed. The really good books for engineering drawing are not elementary enough, and those that are elementary are not good. Still there are books from which any one with a common-school education would be able to learn how to draw, with a little energy, patience, industry and persistence, and without these a young man can hardly expect to achieve much in any way. Making all allowance for the lack of facilities for learning drawing, it is still a little surprising that so few mechanics ever take the trouble to acquire even an elementary knowledge of it. The writer, desiring to get some simple drawings made about two years ago, asked the master mechanic of a large railroad shop to recommend a man, and was informed that out of the 700 men employed the master mechanic did not know of one who could draw even moderately well. This was particularly surprising, because not only were there the sons of well-to-do mechanics serving their time in the shops, but there were several young men who had received superior educational advantages. This is not creditable to our American mechanics. It is for the reason that this accomplishment is so rare that its value should be impressed on the younger generation, who are soon to take the places of those now in authority.

Any one who has observed two mechanics talking "shop" must have seen the frequent use made of sketches to illustrate the mechanism under discussion; one man uses his foot on the sandy floor, another takes a piece of chalk and the bench, while a third may use a pencil and a freshly planed board; but whatever the drawing material may be, it is evident that drawing is essential to enable a mechanic to express himself clearly. And just as a man may be very well informed and yet unable to impart his information through lack of ability to talk well, so some mechanics, though clearly understanding a machine themselves, are unable to explain it to others through inability to sketch clearly. Drawing is to the mechanic a rapid and convenient method of recording the dimensions and the form of any piece of machinery, thus enabling him to collect and preserve information which it would be impossible to retain in the memory, and also helping him to explain things which without drawing it would be almost impossible for others to understand.

Drawing, however, has a much more important and higher value from the fact that it enables a person to represent any mechanism in its true proportions and relation of parts, without the expenditure of time and cost which would be required to make a machine itself. No one is able to form even an approximately exact image in his mind of the true proportions and relations of the parts of even a very simple machine without a drawing. As an old, experienced mechanic once remarked, it costs so much less to make your experiments and mistakes on a sheet of paper than it does to make them with wood and metal. A thorough knowledge of drawing enables a mechanic to form an idea of an unconstructed machine, which in some respects is even more distinct and accurate than the machine itself would be if completed. Numberless instances could be found of most egregious blunders which are made simply because structures which were built were not laid out properly before the work was done. One important railroad a few years ago built some expensive passenger cars, and when they were completed the seats did not come opposite to the windows, as they were not spaced with reference to each other. Such a blunder would be impossible if the car had been laid out properly on a sheet of paper. A competent draftsman on that road is considered an unnecessary expense.

Drawing has, however, another use to young mechanics which is of very great importance to them, and may be a great aid to getting on. That is, it gives an intimate knowledge of the construction of mechanism, and impresses that knowledge on the mind in a way that nothing else can. It has been said that if you want to understand a subject write a book about it. To the young mechanic it should be said, if you want to understand a machine make a drawing of it. It was said of the late Mr. Holley that one of the chief means by which he acquired that wonderful store of information, for which he was so noted was his constant habit of sketching and noting down all facts and data which came to his notice, and also that his sketches and notes were always carefully indexed. Now there is no habit which is so certain to result in the acquisition of a store of valuable information as that of constantly noting by memoranda and sketches facts which seem to be of value. A young mechanic who does this will find that he will soon accumulate sketches of all sorts of shop tools, as formers made by the blacksmiths for doing specially difficult jobs, lathe chucks of particularly useful kinds, various special tools devised by the best men for odd jobs, plans of shops, details of cranes and turn-tables, etc. Such a young journeyman, just out of his time, and starting off to look for another job and to gain fresh experience, would have ten chances of success to one that would fall to an ordinary workman. Such men are constantly in demand; the jobs are waiting for them; they don't have to look for them. It is astonishing to find how ignorant men often are of the facts which come under their direct observation. An employer who finds a man who can give him intelligent information about things he has seen in other shops generally marks that man for promotion.

A knowledge of drawing should be as much a portion of a good mechanic's training as ability to file a level surface now is of a machinist's, or to plane straight and square of a carpenter's. Considering how much railroad companies suffer from the want of good mechanics, it is very much to be regretted that no systematic effort has been made to impart to their workmen some elementary knowledge of drawing.

If a workman has ability somewhat above the average, especially if he has some faculty for designing, he will find that a knowledge of drawing will save him an immense amount of labor by enabling him to arrange his ideas on paper before he attempts to form them in iron, thus saving the loss that occurs in making things that will not fit; but this putting down of new ideas on paper demands a knowledge of drawing, a higher branch of the trade than mere sketching. The latter is all that is necessary for copying things that already exist. Suppose a man wishes to copy a good cross-head he sees somewhere; if he goes to one bench and sketches the cross-head and to another bench and sketches the small end of the connecting-rod, all he has to do is to make the proper lines to indicate the form, and measure off and put down the dimensions, and he is all right. He knows, the parts will cometogether; somebody before him has done the thinking; he simply makes a record of this other person's design. But suppose the connecting-rod end looks to him clumsy, and he wants to improve it. It is just here that the sketching faculty leads him to acquire a knowledge of drawing. When he begins to represent something that has no existence, the necessity of ascertaining whether parts will fit together entails an endless amount of watchfulness; dimensions must be added up and sizes compared at every step of the way, and if the design is at all complicated, the task soon becomes hopelessly impossible. A lot of unrelated sketches of different views of a piece of machinery would be of but slight assistance to a workman who was at work designing; but a man whose wits were bright, who had the mechanical instinct and whose hand and eye were trained by frequent sketching and who had pondered over regular drawings from the drawing office, would soon see that the use of instruments had other advantages than mere neatness. He would observe that the several views given of one detail all had certain relations to each other; that plans, elevations and sections were connected by common centre lines or common base lines, and that this being the case, the use of a T square or a pair of compasses would often enable the designer to see at a glance how things would go together, whereas, without such aids, mistakes in design would be almost certain. This, we maintain, will, in time, be self-evident to an intelligent workman who studies the drawings he works from in earnest, and it is possible for such a man to make himself thorough master of all that is really essential to a first-rate draftsman. We do not wish to under-estimate the value of a thorough technical education, or to depreciate the importance of mathematics, and of the principles of projection or of perspective, or of any other knowledge of the kind not usually learned by our mechanics in the shops, but think that great loss is suffered by mechanics assuming that a technical education is necessary to enable a man to be a good draftsman. It is necessary, first, that a man should *know* what he wants to draw; the form and dimension of every detail must be familiar; he must have the memory and the faculty that enables him to see an object clearly in all positions and to know just how it looks. This faculty, partly a natural gift, must, like all gifts, be cultivated by the constant practice of sketching. This most important acquisition assured, the rest is almost sure to follow. The ability to draw neatly and accurately is mainly a matter of practice. The faculty for design is a rare gift, like a genius for painting or music, and, like such genius, utterly useless unless fortified by knowledge, which is only the result of endless labor and patience. To design well a man must know what has been done before, and so avoid the mistakes of others.

Mechanics who start as boys with a good common school education have equal opportunities with col-

lege graduates to become good draftsmen. Their opportunities for observation are far superior, and they can get information while at their daily work which to the college graduate is almost unattainable.

We know it is possible to learn drawing in the manner indicated. One of the best draftsman known to the writer began his career as an engine wiper, and while engaged in this work he made sketches on the backs of envelopes of nearly every detail of the locomotive. He lived to design some of the best engines of his day, and though he always admitted and regretted his want of technical education, he made up for it by his wonderful knowledge of detail. To the boy who must begin earning his living at 17, we say, don't be disheartened; there are many shelves only half filled where things are pleasanter than on the crowded lower benches. Fit yourself for the upper positions; you have special advantages, which, if properly cultivated, will compensate for lack of college training.

The South Carolina Railway.

The South Carolina Railway is one of the oldest railroads in the United States, and the first for which a locomotive was built in America. Work was begun on it in 1834, and the main line, Charleston to Augusta, was completed in 1834. And the road substantially as it is now was completed in 1848. It is remarkable for having remained so long without increase of mileage and without being absorbed in any great "system." Before the war it was a prosperous and profitable property, paying large dividends. From a statement published in 1859 it appears that the dividend was 10 per cent. in 1856; 8 in 1857, and 8½ per cent. in 1858, and in the latter year the profits were enough to pay 15 per cent. (Among the assets in the balance sheet for 1858 is the item "Negroes, $77,962.") The gross earnings then were somewhat larger than they have been in any year since the war, and its net earnings very much larger. Its credit was so exceptionally good that it had been able to negotiate a loan at 5 per cent. at a time when the United States paid 6 per cent., and when scarcely any other railroad in the country could borrow for less than 6, and many paid 8.

Like most Southern roads, this one came out of the war a wreck. A large floating debt was incurred in rebuilding and equipping it; the traffic suffered with the other business interests of the state when plundered by politicians; net earnings, which averaged about $500,000 a year for six years after 1870, fell off to an average of $350,000 for three years after 1877; and in 1878 it failed to pay interest on some of its bonds and went into a receiver's hands. The road was sold in the summer of 1881, and Nov. 1 was transferred to a reorganized company, in which the stockholders as well as all the bondholders of the old company were recognized. Under the receivership the road was put into condition and its equipment largely renewed. The new company took possession when the state had recovered something like its old prosperity. We have now a brief report of the first full year of the reorganized company—a full and detailed report of earnings and expenses and of the financial condition, but no statistics of traffic.

As this road has remained almost unchanged for 35 years, it will be interesting to trace back its earnings and expenses for a longer period than usual. Below we give them for the 16 years from 1867 to 1882, inclusive, and also for the years 1857 and 1858 before the war:

Years.	Gross earnings.	Expenses.	Net earnings.
1857	$1,449,803	$709,268	$740,535
1858	1,501,108	693,983	807,125
1867	1,316,007	715,247	600,760
1868	1,294,962	704,255	590,707
1869	1,382,167	786,660	595,507
1870	1,485,139	916,096	569,043
1871	1,325,442	879,889	445,583
1872	1,401,211	856,105	545,106
1873	1,491,016	914,551	576,465
1874	1,365,972	850,515	515,457
1875	1,229,303	780,728	448,575
1876	1,126,437	647,753	478,684
1877	1,020,664	593,753	426,911
1878	1,011,862	640,230	371,632
1879	1,052,024	714,278	337,746
1880	1,217,756	875,793	341,963
1881	1,245,287	744,335	501,952
1882	1,313,821	812,631	501,190

Allowance should be made for the depreciated currency after the war and until 1879. Even in this currency, however, the gross earnings have never been so large since the war as in 1858, and the net earnings, never so large by one-fourth, in three years have not been half so large as then.

The earnings fell off largely and rapidly from 1873 to 1877, and remained almost stationary then for three years at a little more than a million of dollars. There has been a decided improvement since, and last year, taking into account the premium on gold in 1870 and 1873, the earnings were as large as in any other year since the war. The expenses have been large of late years, but a considerable portion of them have been for improving the road, or making renewals long neglected. In 1882 3,000 tons of steel rails were laid, which must be nearly one-eighth of the entire quantity in the tracks, and three or four times the average requirements of the road. The company now has 125 miles of steel track, and has rails for 20 miles more, which will leave but 60 miles of iron on its main lines, and with its moderate traffic the steel should have a very long life.

The report for 1882 does not give the traffic of the road. We compare 1881 with 1873 (the year of largest earnings since the war) in order to see what progress has been made:

	1881.	1873.	Inc. or Dec.	P. c.
Train miles	833,479	897,530	D. 64,051	7.1
Passenger miles	10,376,856	7,977,480	I. 2,399,376	30.0
Ton miles	40,570,624	33,169,163	I. 7,401,461	22.3

As the earnings were larger in 1873, it is evident that this, like most other roads, has had to make large reductions in its rates.

Last year, the first eight months of it at least, was not favorable to most Southern railroads, the cotton and corn crops, their great staples, having been exceptionally poor in 1881. The effect of two or three good years before 1881, however, was to keep business reasonably active in spite of the poor crops, as is seen by the increase of earnings last year (about 5 per cent.)

The company as reorganized has mortgage bonds outstanding amounting to $5,282,881, or $20,910 per mile, on which the yearly interest is $315,040. It will be seen that in the worst years the company's net earnings have always been more than that, and that for the last two years they have been 60 per cent. more. There are besides $2,076,000 of income bonds outstanding, on which interest up to 6 per cent. is paid if earned. On these 4 per cent. was paid last year. The capital stock is at the rate of $16,683 per mile. The whole capital account is $45,831 per mile. It will require $2,750 of net earnings per mile to pay 6 per cent. on the stock and income bonds, and last year these earnings were a little less than $2,000.

The company as re-organized seems to be in a stable financial position, and if the improvement of business in the state which has been made within the past three years continues for a few years longer, the company may become as prosperous as in the days before the war. No such growth as is common in the West is to be expected in an old state like South Carolina, but no such growth is required to make its pioneer railroad a very prosperous enterprise.

American Rail Production and Consumption.

The production of steel and iron rails in the United States during the past two years is reported as follows by Mr. James M. Swank, Secretary of the Iron and Steel Association, in tons of 2,240 lbs.:

	1882.	1881.	Inc. or Dec.	P.c.
Iron rails	203,456	436,233	D. 232,776	53.3
Steel rails	1,299,931	1,210,285	I. 89,646	7.4
Total	1,503,388	1,646,518	D. 143,130	8.7

It is astonishing to find a decrease in the production in a year when the consumption for new roads was much greater than ever before, and when there was a considerable falling off in imports.

The capacity of the Bessemer works was probably 20 per cent. greater in 1882 than in 1881, but they apparently produced only 7½ per cent. more rails. The great falling-off in iron rail production was inevitable when the price went down.

It will of course be understood that production and consumption are not quite simultaneous. The rails turned out do not go down into tracks for some time afterward; but the works turn out rails to the extent of their capacity when they have orders ahead. At the end of 1881 they were all full of work—were throughout the year, for that matter—and consequently the stock rolled but not laid was probably at the maximum at that time. In 1882 the demand fell off in the latter part of the year, and there may have been a much smaller stock not laid at the end of the year—fewer new roads with rails made and ready to lay. Thus a considerable part of production of 1881 may have gone into consumption in 1882, while a smaller part of the production of 1882 was left to be laid this year.

For eleven years the rail production has been:

Year.	Iron.	Steel.	Total.
1872	808,866	83,991	892,857
1873	669,520	115,192	794,712
1874	521,847	129,414	651,261
1875	449,901	259,699	707,600
1876	417,114	368,269	785,383
1877	296,911	385,865	682,776
1878	288,295	499,817	788,112
1879	375,143	618,851	993,994
1880	440,859	864,353	1,305,212
1881	436,233	1,210,285	1,646,518
1882	203,457	1,299,931	1,503,388

The production of 1872 was much larger than that of any earlier year, and, as we see, larger than any following year until 1879. But in these seven years there was a rapid increase in the production of steel, with a corresponding reduction in iron rail production. In 1872 90½ per cent. of the rails made were iron; in 1876, 53 per cent.; in 1878, 36⅔ per cent.; in 1882, only 13½ per cent. The production of iron increased after 1878, but only because the steel works were then unable to supply the demand. Last year, when they had been enlarged, though there was a great consumption of rails, and early in the year the prices were still high enough to yield makers of iron rails some profit, the output of iron rails was the smallest since 1862. At current prices, doubtless scarcely any iron rails will be made; and until the demand outruns the capacity of the steel works, it is doubtful if any prices will be reached at which it is profitable to roll iron rails. The indications are that steel rails can be made at less cost than iron, and if so, the steel works will be likely to get all the orders until their capacity is all employed, when prices may rise enough to make it profitable to manufacture iron rails.

In connection with the above statistics of domestic production, it will be well to examine the imports, which we discussed in our issue of Feb. 2. The figures for 1882, however, are not for the imports received by the United States within the year, but for the exports from Great Britain to this country. They cannot differ much, however. The rails exported from England reach this country a little later than the date of export. Last year we think there were no imports from any other country. The imports for five years have been in tons of 2,240 lbs.:

	1878.	1879.	1880.	1881.	1882.
Iron	..	17,045	118,267	122,333	21,135
Steel	9	22,372	141,277	222,597	173,876
Total	9	39,417	259,544	344,930	195,011

This makes the supply available for consumption in these years:

	1878.	1879.	1880.	1881.	1882.
Iron	288,295	392,198	559,126	558,566	224,592
Steel	499,826	641,223	1,005,630	1,432,822	1,473,807
Total	788,121	1,033,411	1,564,756	1,991,448	1,698,399

There must have been laid on new road alone as much as 1,050,000 tons of rails last year, excluding new second tracks and sidings of old roads, leaving less than 650,000 tons for renewals of the tracks of old roads. Now, the statistics indicate that at the beginning of 1882 there were about 11,050,000 long tons (reducing the figures for mileage in Poor's Manual in accordance with the census returns). This would make the renewals in 1882, plus the consumption for new sidings, etc., of old roads, less than 6 per cent. of the rails in track, against 11 per cent. in 1881, 9½ in 1880, 7¼ in 1879, 6½ in 1878 and 6 in 1877—the smallest ever reported.

It is astonishing that there should be such a reduction in this consumption for maintenance in a single year, and very likely part of the difference is due to a reduction of stocks on hand in the possession of the companies during 1882. The difference between 1,142,359 tons of the supply not required for new roads in 1881 and the 648,399 tons in 1882 is too great to be accounted for entirely in this way, however. But it will be remembered that there had been three very active and profitable seasons for the railroads previous to 1882, with a rapidly growing traffic; that in these profitable years, while business was pressing them and seemed likely to continue to grow fast, the companies very generally made liberal renewals, and prepared for the growth of traffic by additional sidings, etc.; that in 1882 traffic generally did not grow, and the roads were fully prepared to carry more than was offered. It is therefore probable that there was no need of renewals in that year as great as in two or three previous years, and that there was still less need for the additions of side tracks and second tracks that are required only when there is an increase in the number of trains run. In the absence of any trustworthy statistics of the mileage of accessory tracks, however, definite knowledge of the proportion of rails renewed yearly is unattainable. But, as we have shown from year to year, there is no doubt that there was a rapid decrease in the proportion of renewals from 1873 to 1877, inclusive, following the introduction of steel and the stagnation in business; and that from 1877 to 1881 there was a marked increase in the percentage of rails renewed, which was followed last year by a sudden and great decrease. At this time about 40 per cent. of the railroad in the country is not more than four years old; and hardly one-fourth of this can be laid with iron rails. And the tracks which are much used are now so generally renewed with steel that we should not expect the requirements for renewals to be large. We have shown heretofore that only 2½ per cent. of the New York Central's tracks and less than 2 per cent. of the Erie's were renewed in their last fiscal year; and in 1881 the renewals of the Pennsylvania's Eastern system were about 5 per cent. Now the wear of the tracks of these three roads should be very much greater than the average for the whole country. The two New York roads, doubtless, will on the average have more renewals to make; but their experience and that of the Pennsylvania also indicate that we have not yet reached the minimum of average renewals; that when the tracks which have more than three or four trains a day are all steel the consumption for maintenance will be considerably less than the average of the past five or six years. This does not prevent the consumption last year from being less than will be required at times hereafter, however. They were made exceptionally small then because for two or three years they had been exceptionally large. Still, with 11,000 or 12,000 miles of road only a year old, and 32,000 miles only four years old, we are not likely to need to take out a large proportion of the rails that were in track at the beginning of this year, which must have been about 12,100,000 long tons.

Record of New Railroad Construction.

This number of the *Railroad Gazette* contains information of the laying of track on new railroads as follows:

Pennsylvania.—The *Western Pennsylvania Division* is extended from Blairsville, Pa., east 5 miles.

This is a total of 5 miles, making 168 miles thus far

reported for 1883, against 419 miles reported at the corresponding time in 1882, and 173 miles in 1881. The weather thus far this year has not been favorable for tracklaying.

THE DISTRIBUTION OF THE CHICAGO SHIPMENTS, as indicated by the Board of Trade reports, has caused the New York *Tribune* to report that there must have been cutting of rates, or other irregularities likely to lead to a break-up of the co-operation of the roads. The feature which has struck it has been the much smaller percentage that went by the Vanderbilt roads last fall and summer than the year before.

Two things seem to be misapprehended by the *Tribune*. In the first place, the east-bound shipments which it copies from the Chicago papers are not the shipments which are covered by the pool. They include considerable freight which is not divided and do not include much more tonnage which is divided. It does not follow that when the Lake Shore is reported in the Board of Trade report to have carried 20 per cent. of the flour, grain and provisions shipped east from Chicago that it has carried that percentage of the traffic which the roads divide, and to 21¾ per cent. of which it is entitled. It may have carried more or less, and nearly always it has carried a *different* percentage of the traffic divided.

Again, the fact that these roads have carried a much smaller percentage of the traffic since March 13 than in the corresponding weeks of the previous year, is no indication whatever that they are not getting "their share," or that their managers are dissatisfied with the share they are getting. During the railroad war—say from the middle of June, 1881, to the end of January, 1882—there was no pool. Each road was entitled to all it could get. For a very considerable portion of that time rates were so low that the Baltimore & Ohio and the Pennsylvania made no effort to obtain traffic—in fact, they rather discouraged it. The Vanderbilt roads at such times carried a much larger proportion of the traffic than they had ever had in any pool. But when the war was ended a new division of traffic was made. The Erie freight lines had been transferred from the Lake Shore and the Michigan Central to the Fort Wayne road, and by the agreement under which the shipments beginning with March 13 last are divided, the Fort Wayne gets 2½ per cent. more and the Chicago & Grand Trunk 1 per cent. more than in the pool in force before the railroad war, and this 3½ per cent. comes out of the two Vanderbilt roads.

The Vanderbilt roads have not carried as much as the percentage awarded them; but together from March 13 to the end of January, having carried 764,292 tons, they were behind but 41,412 tons; and for a considerable period they have been carrying a great deal more than their proportion. In the fall the Pennsylvania roads were very far ahead of their proportion; but at the end of January they were but 1,497 tons ahead, having carried 630,085 tons. The road chiefly in debt is the Chicago & Grand Trunk, which has carried 40,827 tons more than its proportion, or 13⅛ per cent. of the whole instead of the 11 per cent to which it is entitled. The business of a single week is sufficient to adjust all the differences now existing.

As to irregularities in rates *at Chicago*, there have been very few. There was considerable complaint against the Grand Trunk last spring; none or very little against anybody in Chicago of late. At other places there has been some (there is almost always some), first at Peoria, which has always been hard to keep straight, and lastly at St. Louis and some other places. If there has been any "shading of rates" at Chicago it has not been by the roads competing with each other, but by their competing with other places. And even at these other places the irregularities have not been due to any great dissatisfaction with the course of traffic, but they have apparently been due to the unwise eagerness of local agents, entirely without the approval of the managers, none of whom has any serious complaint to make, or justifies any irregularities that his own road may have practiced. It seems not generally understood how strong the tendency is to use all the methods of competition even when business has been divided. All the roads have a force of men brought up to use these methods, skilled in them, and many of them skilled in nothing else. There is a survival of the military spirit, as it were, after an age of peace has opened.

The irregularities heretofore have not been on a scale large enough to be a serious matter were it not certain that if they continued it would be impossible to maintain rates elsewhere, as at Chicago. There is every reason to believe that they will soon be ended. But, whether serious or not, they are not in any degree caused by the action of the roads at Chicago.

A VANDERBILT AND CANADIAN PACIFIC ALLIANCE is announced, for competition with the Grand Trunk. It will probably puzzle many to understand how a line from Albany to Chicago can make an alliance with another line across the continent from Montreal westward north of Lake Superior. The fact is the Canadian Pacific has very little to do with the alliance. But its promoters are the leading spirits in two other Canadian corporations which, in connection with the eastern end of the Canadian Pacific and the western end of the Canada Southern, will form a new line between Detroit and Montreal, very direct, of about the same length as the Grand Trunk, which will be able to compete with the Grand Trunk for the traffic interchanged between Canada and the West—Toronto, Ottawa, Montreal and Quebec all being reached by the new line, the main part of which will be supplied by the 121 miles of the Credit Valley Railway, now in operation from the Canada Southern at St. Thomas northeast to Toronto, and by the 175 miles of the Ontario & Quebec, now under construction from Toronto northeast to a branch of the Brockville & Ottawa line of the Canadian Pacific at Perth. This line, except near Toronto, will be so far north of the Grand Trunk as to affect its local traffic but little. As to the through traffic, besides the limitation on rates caused by the competition of the trunk lines, there is the further limitation of the cheap water transportation by lakes Erie and Ontario, the Welland Canal and the St. Lawrence, which also affects greatly much of the Grand Trunk's local traffic. Of the line from Detroit to Montreal, about 580 miles, 178 will belong to the Canadian Pacific, and 106 to the Canada Southern.

But as the Ontario & Quebec road will not be done until the latter part of this year, there can be no competition with the Grand Trunk by it at present. But this, it is said, will be secured by making a freight line from Montreal and Ottawa to the west by way of Brockville on the St. Lawrence and the Utica & Black River road thence to the New York Central at Utica. This is an extremely circuitous route, however, the distance from Montreal to Brockville by it being 194 miles, against 125 by the Grand Trunk, while the distance from Chicago to Montreal by it is 1,036 miles, against 864 miles by the Grand Trunk. This difference, however, may be compared with that between the Grand Trunk route and the New York Central route between Boston and Chicago—1,161 miles by the Grand Trunk and 1,013 by the New York Central. The Grand Trunk, by making a difference in rates on west-bound freight, gets a very considerable Boston business, and the New York Central, it may be said, will be able to do as well at Montreal.

Montreal is not Boston, however, nor is Canada New England. The chief value of the Boston and New England traffic is in the large amount of high-class manufactured goods which it affords to cars going west. Very little such freight comes from Canada. Even if its manufactures were as important as those of New England they could not be brought to the United States to any extent.

There is a considerable immigration from Canada or Canadian ports to the West, but the immigrants arriving at Canadian ports are, we believe, for the most part brought by steamers which run in connection with the Grand Trunk, and who are ticketed through by that road; and the route of the emigrating Canadians is determined chiefly by the railroad on or near which they live.

Thus the route from the West to Montreal via Brockville, while certainly able to make or break rates to Montreal and some other Canadian points, cannot be compared in importance with the Grand Trunk route from the West to New England via Boston. The new line cannot do the Grand Trunk nearly as much harm by spoiling its Canadian business as the Grand Trunk can do the Vanderbilt lines harm by spoiling their Boston business. It will, however, give the Vanderbilt roads a distinct gain in power to be able to make rates to Montreal. Heretofore they had not even the power which that gives to affect the Grand Trunk's position. With the Ontario & Quebec line completed, however, and a competing line with the Grand Trunk so made all the way from Detroit to Quebec, the amount of Grand Trunk traffic which can be affected will be much greater. And the new line will be a rational one for the interchange of traffic between Canada and the states west of Detroit River as much as the Grand Trunk and the Great Western are. When done, a railroad war will involve through and local Canadian business to about the same extent that it now does New York and New England business; the Grand Trunk will have more to lose by one, and will on that account, probably, be more anxious to avoid one.

CHICAGO & NORTHWESTERN WORKING EXPENSES, the *Commercial and Financial Chronicle* reports, as obtained "from an unquestioned source," to have been $8,145,999 in the seven months of the company's fiscal year ending with December, which is $980,533, or 13⅜ per cent., more than in the previous year. As the gross earnings meanwhile increased but $293,014, there was a *decrease* of net earnings for the seven months amounting to $687,519, or 8⅜ per cent. This decrease in net earnings is made with a large increase of mileage, so that the contrast with the profits in 1881 is even more unfavorable than these figures indicate. But it should be remembered that the profits in 1881 were extraordinarily large, and though the net earnings in 1882 were $687,500 *less* than in 1881, they were nearly $700,000 *more* than in 1880.

As there was considerable decrease in *gross* earnings in January, and the cause was in the snow blockades which probably increased expenses considerably, there was doubtless further decrease of net earnings in that eighth month of the company's fiscal year, so that the total decrease for this period probably was as much as 2 per cent. on the company's capital stock. This is not so serious a matter, however, when we recollect that last year the company earned 14.4 per cent. on its stock.

As to the remainder of the fiscal year, it will probably be better than last year so far as the carrying of farm produce is concerned; but while this traffic was light in the spring of last year, the immigrant traffic and carriage of lumber and merchandise westward was large without precedent, so that the last third of the company's year was in many respects favorable, so much so, indeed, that of the $4,350,000 gain in gross earnings made during the year, $1,425,000 was made in these four months. We may, perhaps, have an equal movement of miscellaneous traffic this coming spring, and we are likely to have traffic swelled by the forwarding of freight which was kept back by storms in winter; but we must not count on getting all this during the present fiscal year, that is, before the end of May. That depends much on the spring weather. In 1881, though traffic was interrupted all winter and through March, the great swell of the dammed-up traffic was not fully felt until June. Marketing crops was hardly possible until the frost left the ground, and that was so very late in the spring that every moment was required by the farmer to prepare his ground and put in his crops; and the grain which he would have marketed partly in winter and largely in spring was kept back till June and July, making the movement in those months altogether unprecedented. But unless we have the miraculously bad spring weather of 1881 over again, we may expect the Chicago & Northwestern and other Northwestern roads to have very satisfactory earnings during the spring months.

NEW YORK, LAKE ERIE & WESTERN EARNINGS AND EXPENSES are now reported for the month of December, and the first quarter of the company's fiscal year. In December the report shows, compared with 1881, an increase of $120,195 (7 per cent.) in gross earnings, of $59,839 (4¼ per cent.) in working expenses, and of $60,356 (13⅜ per cent.) in net earnings. For the six years since the reorganization the December earnings and expenses have been:

Year.	Gross earnings.	Expenses.	Net earnings.
1877	$1,465,133	$1,003,874	$461,259
1878	1,205,755	900,029	305,726
1879	1,398,245	1,048,477	349,768
1880	1,726,788	1,229,605	497,183
1881	1,571,208	1,189,826	381,382
1882	1,691,404	1,249,665	441,739

Thus the gross earnings last December were a little less than in 1880, but larger than in any other year. The expenses were larger than in any previous December, and the net earnings were exceeded in 1877 as well as in 1880. December was a favorable month for through trunk line traffic, but on some of the railroads there was less activity than previously in some other traffic. The Erie's profits would have been large then, however, but that the expenses were unusually large—larger than in any other month since the reorganization. Of increasing expenses, by the way, we hear complaint elsewhere.

For the three months ending with December the earnings and expenses of the Erie for six successive years have been:

Year.	Gross earnings.	Expenses.	Net earnings.
1877	$4,571,419	$2,897,253	$1,674,166
1878	4,060,678	2,617,384	1,443,294
1879	4,627,776	3,004,089	1,623,687
1880	5,424,035	3,294,744	2,129,291
1881	5,101,544	3,454,901	1,646,643
1882	5,329,237	3,486,964	1,842,273

The gross earnings for the quarter are $227,694 (4½ per cent.) more in 1882 than in 1881, and but little less than in 1880—much larger than in earlier years. The working expenses were larger than in any previous year, though only $32,063—less than 1 per cent.—more than in 1881. The net earnings were $195,630 (12 per cent.) more than in1881, but were $287,018 (13½ per cent.) less than in 1880.

During part of the time the last year there was some diversion of the local traffic of the line between Binghamton and Buffalo by the New York, Lackawana & Western.

PHILADELPHIA GRAIN EXPORTS have fallen off remarkably within the last two years. In 1876 its exports were but a tenth less than the Baltimore exports and were 40 per cent. of the New York exports. In 1879, when its exports were greatest (32,750,000 bushels), they were 40 per cent. less than the Baltimore exports, and equal to but 26 per cent. of the New York exports. They were nearly the same in amount the next year, when there was a large increase at New York, but a decrease at Baltimore; but in 1881 they fell off 42 per cent. from 1880, and in 1882 nearly 60 per cent. from 1881, leaving them but 7,600,000 bushels, or 25,000,000 (77 per cent.) less than in 1879, 76 per cent. less than in 1880, and 10,840,000 bushels (59 per cent.) less than in 1881. It must be remembered that exports fell off everywhere after 1880, but not by any means so rapidly elsewhere.

Compared with 1880, when the total Atlantic exports were largest, the decrease and percentage of decrease at four of the ports has been:

At Montreal	12,319,927	bushels or	46	per cent.
At New York	65,203,733	" "	48	" "
At Philadelphia	23,993,881	" "	76	" "
At Baltimore	29,656,220	" "	58½	" "

What the special causes are that have thus especially affected the Philadelphia receipts we are unable to say. The deliveries of the Pennsylvania Railroad at Baltimore and New York have not fallen off in anything like this proportion. Philadelphia seems for the time to have almost withdrawn from the business of exporting grain.

CLASSIFICATION OF FREIGHT prevents our judging of earnings from tonnage. Shipments from the West to the seaboard are so overwhelmingly in the two or three lower classes that we are accustomed to speak of the grain rate as the rate. In fact an extremely small proportion of the western freight goes into a class higher than that including provisions. It is vastly different with west-bound freight. As much as a fourth of that shipped from New York is usually first-class freight, paying now 75 cents per 100 lbs. The proportions of second and third-class freight are small—usually 10 to 12 per cent. of the whole—and 55 to 65 per cent. are of the fourth class, and (when there are any) the still lower classes. But the first-class freight affords a very important part of the earnings. At the rates now current (which ruled during only two months of last year, however,) the *average* rate on the shipments of 1883 would have been 46.2 cents per 100 lbs., or about the third-class rate. While 23.1 per cent. of the freight was first-class, it yielded 37.5 per cent. of the earnings; but 66.5 per cent. of the freight below third-class yielded but 50.4 per cent. of the earnings.

The relative proportions of the different classes shipped

from New York have not varied very greatly, but most when very low railroad rates have taken from the canal boats coarse freights which they usually carry, thus increasing the proportion of low-class freight forwarded by rail.

THE JOINT EXECUTIVE COMMITTEE is in session this week, both passenger and freight departments. The proceedings of most general interest concerned the irregularities in rates on east-bound freight, mainly from Peoria, St. Louis and smaller competing points, which have occurred recently. One of the methods of doing this has been by billing from the competing point to a near-by local point, and rebilling thence at a rate low enough to make a reduction in the regular rate, which method at pooling points also withdraws the freight so billed from the amount divided among the roads, and is simply a fraud when a company has agreed to accept a certain proportion of this business. Last Wednesday, at the meeting of the Committee, the companies represented signed an agreement not to permit any variation in the east-bound rates, either by direct reduction or by local rates whose sum is less than the through rates, and not to pro-rate with or accept through bills on through cars from any connecting road which does cut the rates, and to discharge agents who are found to have offered less than the agreed rates.

On account of the illness of Mr. Fink, the passenger department has not been able so far to make much progress. Mr. Fink has been very much overworked by the placing of such an enormous mass of most important business under his supervision since the end of the railroad war, a year ago, and he now asks that the business of the passenger department be placed in other hands.

IMMIGRATION IN JANUARY is always light, but this year the arrivals were but 12,940, against 18,489 last year—a decrease of 30 per cent. For the seven months ending with January the arrivals were 283,419, against 346,846 last year, a decrease of 18 per cent. It is not likely that the immigration will be as great during the coming season as it was in the last two. A very large proportion of the immigrants—by far the larger part—become laborers in factories, on new buildings and railroads, etc., and do not become farmers. The demand for this kind of labor has already fallen off, and it is not easy for new men to get work. No one finds this out quicker than the Europeans who would emigrate if there was plenty of work for them here at good wages. They are kept well informed on these to them vital points by their countrymen and townsmen who have preceded them; and if there is not a good prospect for them to get work here, they stay at home.

THE DELAWARE & HUDSON CANAL COMPANY proposes to its stockholders that $10,000,000 of its bonds which mature in 1884, 1887 and 1891 be retired by issues of stock to the same amount, to be offered to the stockholders at par. The company's share capital is now $20,000,000, and its funded debt $18,763,000. When the anthracite coal business is prosperous the company earns good dividends, but there have been years together when it paid none. It has a number of leased lines, which last year yielded a trifling profit, but in unfavorable years net a loss—in the three years previous to 1879 more than half a million a year. Substituting stock for bonds will reduce the annual interest charge of the company to about $600,000, and so greatly strengthen the financial position of the company and probably enable it to pay dividends of some kind in the very worst of times.

WEST-BOUND SHIPMENTS have not been very heavy this winter, reflecting the prevailing dullness in business. The shipments last year, however, were extraordinary, never approached before, and doubtless unnaturally large. They were then 45 per cent. more than in 1880–81, which were 9 per cent. less than in 1879–80. This winter the shipments, 30 per cent. less than last year, have been slightly greater than in 1880–81, but 10 per cent. less than in 1879–80. These shipments indicate the prosperity of the country, or its consumption of merchandise, better than anything else; but many things must be taken into consideration besides the mere bulk of the shipments. At one time we were importing great quantities of foreign iron—scrap, pig and rails—and this material of comparatively small value made a great amount of freight, which nearly all went west.

Foreign Railroad Notes.

The railroads which carry grain and timber from the fields and forests of Hungary and Austria to North Germany and the North Sea ports (the shortest route to England) have to meet a varied competition of routes and markets. First, the steamboats on the Danube try to carry the traffic to the Black Sea, whence ships take it, as they do grain from Odessa, which is not far from the mouth of the Danube, to all European ports, and especially to Mediterranean ports. Then the railroads to the Adriatic carry the grain to Trieste or Fiume, much nearer to the grain markets of the Mediterranean and Western Europe. Finally, all must compete with American grain brought across the Atlantic, but brought across with less cost for freight to North Sea than to Mediterranean ports. Thus, to get any of the traffic, the routes from Austria-Hungary to the northwest must often accept very low rates, and as the rates on the long water routes to the south fluctuate greatly and rapidly, it is not easy to maintain inflexible rates by rail to the North Sea. It is concerning this traffic that the Prussian state railroads and the Austrian roads have had serious disagreement, resulting in close connection of the Austrian roads with lines of boats on the Elbe, worked by a sort of cable system, we believe.

Rates now in use from Vienna and Pesth to Hamburg are given as follows, for the all-rail and the rail-and-river route. One of the all-rail routes, tolerably direct, but probably not the shortest, is 575 miles long from Vienna and 747 from Pesth to Hamburg. We have reduced the rates to cents per 100 lbs.:

	From Vienna — All rail.	From Vienna — Rail and river.	From Pesth. — All rail.	From Pesth. — Rail and river.
Grain	48	27	53	33⅓
Wine and beer	67½	40	80¾	43
Timber	34	24	42	35
Petroleum	44½	34	53	43

The all-rail rate on grain from Pesth is equivalent to 63½ cents per 100 lbs. from Chicago to New York, and the rail-and-river rate to 40 cents, as against 30 cents, the all-rail rate now in force from Chicago to New York. If the Chicago railroads could have got this German-Austrian rate last year, their profits on the Chicago shipments would have been about $17,000,000 more than their actual profits, and their gross receipts from it would have been $26,700,000, instead of about $9,300,000 actually received.

On the first of July last there were 588 apprentices in 34 shops of the Prussian state railroads, 277 of whom were in shops expressly designed for the instruction of apprentices. These apprentices receive a special training for the purpose of securing thoroughly skilled mechanics for the government shops; it is forbidden to use them as laborers, or in any one branch of their trade in which they may have acquired some facility; but they must receive instruction and be made skillful in all things which pertain to their trade, without regard to the profit which the shop can make out of them. The apprentices as a rule must not be less than 14 nor more than 16 years of age, and have passed through the studies of an elementary school. The term of apprenticeship is four years. After appointment they are paid wages varying according to the place where employed, but never more than 20 cents a day at first, which is advanced every six months according to the apprentice's ability, as shown by special tests, but never so as to equal the lowest rate of wages paid to regular employés in the trade. A tenth of these wages is withheld until the end of the apprenticeship. For the first two years the apprentices receive their training not in the great shops, but in small ones, which are fitted especially as training-shops, in which the apprentices are under direct supervision and so far as possible are employed at work fitted for their capacity at the time. These shops are so equipped that all the work of the trade can be done in them. The machine-tools used are worked by hand or foot, to avoid accidents. Special effort is made in them to acquaint the apprentices with the different methods of treating different kinds of materials, the use of tools, etc., and they are taught to make and repair the simpler tools. These apprentice-shops are placed in charge of foremen of great skill and experience in their trades, distinguished for cultivation and solidity of character.

After two years in these shops the apprentices are put in the ordinary shops and set at various kinds of work, and their adaptation for special kinds of work is noted.

Besides this practical training, the apprentices receive instruction in schools on two week days and on Sunday of each week in branches of knowledge calculated to help them to practice their trades independently, special regard being had to thoroughness in what is taught. In these schools the construction of machine-tools is explained and the properties of materials, and the apprentices are taught to make drawings of simple objects, parts of machines, etc., and to construct patterns after drawings and make specifications of the materials required.

About three-fourths of the apprentices learn what the Germans call the locksmith's trade, which includes all iron-fitting, etc. A tenth become turners; the rest cabinet-makers, smiths, saddlers, coppersmiths, brass-founders, painters, etc. The "locksmiths" learn smithwork and turning also.

On page 1 of the *Railroad Gazette* for 1881 may be found a fuller account of the regulations governing these apprentices. The whole system is one of great interest in these times when thoroughly trained mechanics are hard to find, and when there is so much complaint that it is very difficult to get the thorough training.

Cincinnati, New Orleans & Texas Pacific Railway Company and its Organization.

Cincinnati has always been both a Northern and Southern city; settled by Northern men, its trade was largely with the South by the Ohio River. Its first railroad, the Little Miami, was built largely with a view to securing local traffic from the country north, and of securing the trade during the winter months of the northern cities of Ohio. Its Southern trade was, like much Northern trade in early days, attracted by convenient access and low prices; early delivery of goods was not necessary, as not only did the river routes suffice, but the merchant was allowed his time for taking advantage of lowest river rates. It is remarkable that the first railroad into the South should have come from the city of Louisville rather than from Cincinnati; but this was partly due, perhaps, to the character of the country lying directly between Cincinnati and the greater Southern cities.

President Lincoln, in his message to Congress, 1863, advised the construction, on military grounds, of a road from Cincinnati to Chattanooga; and in 1869, the city of Cincinnati put this suggestion into shape. The construction of the Cincinnati Southern Railway was begun in 1874 and completed in 1880. The road-bed is a very fine one, but the country very difficult, requiring about two miles of iron bridges, three miles of iron viaducts, two miles of wooden trestle and five miles of tunnels.

The principal object in view in building the road was connection at Chattanooga with the network of Southern roads there terminating.

The Alabama Great Southern, formerly the Alabama & Chattanooga Railroad, was re-organized in 1877. Before its completion from Chattanooga, Tenn., to Meridian, Miss., the only railroads which the valley traversed by the present road possessed were the Wills Valley and the Northeast & Southwest of Alabama. These last two roads tried to reach each other for years, and when at last they succeeded, and became joined under the title of the Alabama & Chattanooga Railroad, this latter went through a series of financial convulsions which, after successive bankruptcies, resulted in the road being sold to an English company having its head-quarters in London. The road being next known as the Alabama Great Southern Railroad, and presenting indications of considerable development, the English company resolved to go further ahead. In 1881, the Vicksburg & Meridian Railroad and the Vicksburg, Shreveport & Pacific Railroad were acquired. This latter extended only 73 miles from Delta, La., to Monroe, La.; an intervening gap between Monroe and Shreveport, La., is being rapidly built. The charter of the New Orleans & Northeastern Railroad was also acquired and considerable progress has been made with the road, which runs from Meridian, Miss., to New Orleans, La.

The Cincinnati Southern Railroad had been completed and was being operated under a license to a company organized for this purpose, the property being held for the city by five trustees, required to lease it for operation; in 1881 the lease was granted to the Cincinnati, New Orleans & Texas Pacific Railway Company, controlled by the London company owning the Alabama Great Southern—the movement of the city of Cincinnati for a Southern line thus being completed by minds on the other side of the ocean.

The line of roads thus completed extends about 1,200 miles; it now exists in separate companies united under a General Manager, who is gradually consolidating them into one; and this fact alone is sufficient to give the plan of organization special interest.

It may be remarked in the first place, that in the organization of a new railroad discipline becomes of the first importance; there are no past precedents nor routine of customs to bind the road together, and there is special need of immediate and direct supervision which shall not only reach all departments, but have an influence on all the employés in each; in other words, there is special reason for vigorous and immediate control by one experienced mind, in order promptly to place affairs in the best working order.

A railroad needs all the results of thorough discipline; but possesses none of the means used in other organizations to create discipline. It has neither a drill, a uniform, hardly a corps spirit, since its men work singly or in couples, and in all respects resemble more nearly in organization a regiment of Kentucky hunters during the border wars than a brigade of regular troops.

Discipline on a railroad is effected almost entirely through the medium of reports. For this reason, as well as for others, the organization of a new road by departments is more immediately effective than its division by territory; and where all departments are responsible to an active and experienced manager there is little doubt that a new road can more quickly be brought into a condition of thorough efficiency. One mind, vigorous and energetic, can in this way inspire and bring all under discipline as to many details necessary to efficiency, producing at once that unity possible, where there has been no past, only by vigorous and immediate control by one mind; or, what is much more rarely found, the utmost harmony by immediate and mutual co-operation of a number of men who have never before worked together for a common end.

This method of organization throws a very large amount of work upon the General Manager, and is effective in proportion to his ability to give attention to details of the most varied character, requiring for successful treatment special experience in each kind of service.

ORGANIZATION.

As we have said, the General Manager of the Cincinnati, New Orleans & Texas Pacific Railway is General Manager of the entire line. The General Master Mechanic reports to him, and is in charge of all the shops of the roads and of all engineers and firemen on each. The Chief and Consulting Engineer is in charge of maintenance of way on the Cincinnati Southern, and is practically Chief Engineer of the line. Each road has its Superintendent, its Passenger Agent and Freight Agent reporting to the General Manager, who may be said to be the head of both passenger and freight departments.

The Superintendent of the Cincinnati Southern, to show the method on each road, is in charge only of transportation; he is responsible for the movement of trains, including train dispatching, car record and the discipline of conductors and station agents. Engineers and firemen are under his orders, only while on the road, and he may request the suspension of any one through the man's shop foreman or master mechanic, but is himself responsible for making such a request.

The General Manager requires detailed reports of any such cases, and personally examines, whenever necessary, the man and all the circumstances of any failure to obey orders which is evidently not intentional or where the responsibility is doubtful; the object being to secure proper discipline without that dispute as to responsibility which is possible where the conductors find their head in one officer and the engineers and firemen in another.

These detailed reports as to cases of discipline will illus-

trate the requirements as to reports of all departments. It is the object so far as possible to secure for the General Manager all facts of the road's daily working necessary to a proper judgment upon the affairs of each department separately and as related to others; for example, the Superintendent makes a daily report of cars delivered and of empties received.

The maintenance of way department of the Cincinnati Southern is, as we have said, in charge of the Chief Engineer, who has under him two road-masters, each road-master having several supervisors. There is one Purchasing Agent for all lines. There is one Auditor, but the General Manager signs all vouchers.

The organization is yet quite incomplete, and we have referred to it in order to show the facts upon so large a road entirely new, one may say, and requiring immediately organization and effective discipline. It should not be forgotten, however, that the best method of meeting such an emergency is by no means necessarily the best method for continuing the operation of a road, when, after years of experience, the organization begins to have a life of its own.

THE SCRAP HEAP.

Locomotive Building.

The business at the Paterson locomotive works seems to be in a satisfactory condition. Nearly every department is running its full complement of hands, and there is enough work on hand to last six months. Unless some wonderful and not to be expected depression should set in there will be enough orders received during the next six months to last as long into the future as manufacturers care to speculate. An addition is being constructed to the Cooke Works for the manufacture of the Foss & Pevey cotton cards and other cotton machinery, and at Grant's a new air motor is being placed in position. At Rogers' the reorganization of the force has taken place and the full complement of 3,000 hands is again employed.—*Paterson (N. J.) Press, Feb.* 17.

The Baldwin Locomotive Works in Philadelphia are filling an order for consolidation freight engines for the Philadelphia & Reading road.

The Dickson Manufacturing Co. in Scranton, Pa., is having built by Hewes & Philips in Newark, N. J., two very large planers and some very large and very heavy lathes

The shops of the Tanner & Engine Delaney Co. in Richmond, Va., are now substantially completed and the tools are being put in. The buildings include an erecting shop 300 by 43 ft.; tool room, 51 by 43; office and drawing-room, 76 by 43, two stories high; boiler shop, 196 by 66 ft.; machine shop, 196 by 66; smith shop, 140 by 66; pattern shop, 56 by 66; brass foundry, 41 by 56; iron foundry, 150 by 200; carpenters' shop, 158 by 66 ft., and the necessary smaller buildings, such as engine and boiler house, store rooms, etc. These shops will soon be ready to begin work, and will manufacture locomotives, and also stationary engines and general machine work.

Car Notes.

The Indianapolis Car Works are building for the Pittsburgh, Cincinnati & St. Louis road 50 box cars 36 ft. long and intended to carry a load of 25 tons each.

The New York, Lake Erie & Western shops in Jersey City have completed several light cars for use on suburban trains and are building a number more. These cars are much lighter than the ordinary passenger cars and are arranged like the cars first built for the Metropolitan Elevated road, having in the middle of the car six ordinary double seats running crosswise of the car in the usual way, but fixed, while from these double seats to the end the seats run along the side of the car. The cars are light and pleasant in appearance, but the arrangement of the seats is not the best that could be devised.

The following items are extracted from the report of President Darwin to the stockholders of the Allen Paper Car Wheel Co., at their annual meeting, Feb. 14: "The receipts of the company in 1880, the year of its organization, and the succeeding years were as follows: 1880, $286,163.72; 1881, $593,057.72; 1882, $782,353.32. The total number of wheels made to Feb. 1, 1883, is about 30,000. Of this number the company have not learned of a single instance where loss of life to a passenger or employé, or any serious injury to the rolling stock or roadbed, was caused by the breaking of a paper wheel or an axle used in connection with them. The business of January last was the largest, with one or two exceptions, since the organization of the company, and the first six days of February of the present year, they booked orders for more wheels than for the entire corresponding month of last year. During the last year they have added $67,695.32 in improvements to their already extensive plants—making their present capacity 30,000 wheels a year."

Bridge Notes.

The Passaic Rolling Mill Co. in Paterson, N. J., has just completed a large order for bridge work for the Delaware, Lackawanna & Western. The works are not very busy at present.

The Missouri Valley Bridge & Iron Works in Leavenworth, Kan., have a number of contracts on hand, chiefly for highway bridges. These works have lately been enlarged, and a number of new machine tools have been added to their equipment.

Iron Notes.

All the creditors of C. H. and Anthony Kloman, trustees under the will of A. Kloman, deceased, met yesterday afternoon in S. Schoyer's office. A full exhibit of the trust was made, showing a surplus of nominal assets of $76,000 over all liabilities. A committee appointed to examine the condition of affairs reported that the firm had considerable raw material on hand for running their mill which was paid for. Business was pronounced to be in a better condition than when Mr. Kloman left the management of the mill to his sons. There were no executions against the trust, and the only apparent cause for the firm's failure was the failure of the Moundsville, W. Va., Iron Works, in which C. H. and A. Kloman held interests as individuals. This failure affected their credit in the banks here as trustees of the Kloman estate and prevented a renewal of their paper. They were compelled to pay their entire indebtedness at once, using their working capital to do so. This compelled them either to shut down the mill or get an extension from their creditors. The creditors unanimously decided to give the firm a three years' extension and applauded the firm's course as being very honorable. Attorneys were instructed to prepare legal papers securing the extension.—*Pittsburgh Telegraph, Feb.* 17.

The large iron firm of John V. Ayers' Sons, of Chicago, has suspended payment, with liabilities estimated at nearly $2,000,000. The suspension of the firm has made necessary the appointment of a receiver for Brown, Bonnell & Co., at Youngstown, O., in which corporation the Ayers were the principal stockholders.

The Paterson Iron Co. in Paterson, N. J., is fairly busy, with about three-fourths of the hammers at work.

The liabilities of the Union Iron & Steel Co., of Chicago, are stated as follows: First mortgage, $500,000; payments on account of bonds, $278,400; notes payable, $2,080,647; accounts payable, $562,791; total, $3,421,838. The assets are as follows: Real estate, mine, docks, tracks, etc., frog-shop, wire and merchant mills, rail mill, steel plant and four blast furnaces, $2,388,938; notes and bills receivable, $671,569; inventory, $1,658,626; total, $4,719,833; surplus of assets, $1,297,295. Another estimate increases the estimated value of the assets to $4,876,769, and the surplus over liabilities to $1,454,931.

The new furnace of the Shenandoah Iron Co. at Milnes, Page County, Va., went into blast Feb. 1. It is 15 ft. bosh and 70 ft. high, and will use local ores and charcoal for fuel.

Falcon Furnace in Youngstown, O., has gone into blast, after a stop for repairs.

Centre Furnace near Ironton, O., has gone out of blast, and will be put in order for a new run.

The citizens of Coshocton, O., have decided to raise $15,000 to assist in rebuilding the steel works there, which were recently destroyed by fire.

Manufacturing Notes.

The Betts Machine Co. in Wilmington, Del., has lately completed a number of machine tools for the Missouri Valley Bridge & Iron Works in Leavenworth, Kan.

Thompson, Epping & Carpenter, of the Keystone Steam Pump Works, still employ a full force, and have recently shipped pumps to the Coshocton (O.) Steel Works; Thomas Furnace Co., Niles, O.; Anderson, DuPuy & Co.'s new steel work at Chartiers; Newbury Fire Co., Cleveland, O.; Himrod Furnace Co., Youngstown, O., etc., etc. They report business brisk in their Ajax metal for mill bearings. —*Pittsburgh American Manufacturer.*

Hewes & Phillips in Newark, N. J., are building two very large planers for the Dickson Works at Scranton, Pa., and have a number of other unusually heavy machine tools in progress to fill orders.

James Rees & Sons, in Pittsburgh, are building the engines for a steamboat which is to be built and run in connection with the Canadian Pacific on the Saskatchewan River in the Canadian Northwest territory.

The Rail Market.

Steel Rails.—The *Iron Age* says: "The market is dull and prices weak and irregular. Manufacturers quote $40 at mill, and in a small way are entering orders, but in most cases would be willing to shade a dollar per ton on large lots. Buyers appear to be quite indifferent, however, and at $39 even there is no great demand. It is a long time since the market had so gloomy an appearance as at present, although it is probable there will be quite an active demand as soon as the tariff is definitely fixed. In the meantime both sides are disposed to wait and take whatever risks there may be in a policy of that kind."

Rail Fastenings.—Spikes are quiet at $2.80 per 100 lbs. Track-bolts are unchanged at $3.50 to $3.75 per 100 lbs. for square nuts, and $3.75 to $3 90 for hexagon nuts. Splice-bars are quoted at 2¼ to 2⅝ cents per pound, with moderate demand.

Old Rails.—Old iron rails are dull with some small sales at $26 to $26.50 per ton in Philadelphia for tees, and $27.50 for double-heads. Large lots could probably be had at lower figures.

Lighting the Car Steps.

The Lehigh Valley Railroad Company is experimenting with a new patent lamp to light up the steps of their cars. The lamps are placed under the steps and so far have worked well in affording passengers light to get on the cars.

A Big Wire Rope.

The John A. Roebling's Sons Co. shipped from Trenton, N. J., to San Francisco last week a wire rope 1½ in. in diameter and over four miles long. It is for a cable street railroad in San Francisco, and, it is claimed, is the longest and heaviest wire rope ever made in the United States. The rope weighed about 25 tons and was loaded on two flat cars secured together by chains, in addition to the usual coupling. It was shipped over the Pennsylvania Railroad.

A Misplaced Switch..

The Massachusetts Railroad Commissioners have rendered the following decision regarding the collision on the Worcester & Nashua road at Ayer Junction on Feb. 6:

"This was a head collision between an express passenger train and a freight train standing on a side track at Ayer Junction. The cause was a misplaced switch, and the sole fault was in the switch tender, who neglected to close it after throwing it open to allow a portion of the cars to pass to the side track. His reason for not closing the switch was that it was soon to be used again. And he claims that the express train was ahead of its time, and ascribes the accident to that fact. Conclusive evidence disproves this theory. The switchman was clearly wrong in leaving the switch open and going to another part of the yard. The board repeats a suggestion made in another case (on another road), that a switchman opening a switch in the main track be directed to stand by it, and always to throw it back on the main track before leaving it. And a rule is still safer which requires him to throw it back in all cases after it has been used, whether he leaves it or not."

Medal for Standard Gauges

The John Scott legacy medal, by the city of Philadelphia, has just been awarded to the Pratt & Whitney Co., upon the recommendation of the Franklin Institute, for its standard gauges, taps and dies. This is certainly an honor to that firm, and a very just and proper recognition of their great service in perfecting a system of gauges and of screw-threads. The medal bears upon one side the seal of the city of Philadelphia, with the words: "Awarded by the City of Philadelphia," around the border. The obverse has engraved in the centre: "To the Pratt & Whitney Co., Hartford, Conn., for their Standard Gauges, Taps and Dies, on the Recommendation of the Franklin Institute."

Locomotive manufacturers are becoming interested in the standard system of screw-threads, and the Pratt & Whitney Co. has recently received orders for a set of United States standard thread gauges from the Mason Machine Co., of Taunton, Mass.

An Historic Ferry-boat.

The transfer steamboat "Maryland" has recently been thoroughly overhauled and has received many improvements, and has again been put on the transfer ferry between Harlem River station and the Pennsylvania Railroad station in Jersey City by the New York & New England Co. The old "Maryland" is now over 30 years old, and will be remembered by many thousands of travelers and old soldiers. The boat was built in 1852 for the Philadelphia, Wilmington & Baltimore Co., and at that time was believed to be the largest ferry-boat in the world. For a number of years she was used to transfer trains across the Susquehanna between Perryville and Havre de Grace. When the war first broke out and the railroad between Baltimore and Philadelphia was broken by the burning of the bridges near Baltimore, the boat was for some time in very active service, transporting troops and stores from Perryville to Annapolis. After the bridge over the Susquehanna at Havre de Grace was built, she was laid up for several years, and in 1876 was bought by the New York & New England Co. and placed on the route between the Harlem River and Jersey City, and has since been actively employed until laid up for repairs a short time ago.

Terminal Facilities.

A freight conductor, whose attentions to his best girl were not appreciated by the family, says that her old man furnished him with terminal facilities as well as a free pass through the garden gate a few evenings ago.

"Are we on a down grade?" asked an impetuous passenger, gazing first at the conductor and then earnestly out of the window. "No, Sir," replied the conductor, coldly. "This is a perfectly level track. There are no grades on this road." "That's curious!" mumbled the passenger, opening the window and sticking his head out. "If anything" continued the conductor, exasperated by the man's conduct, "if anything we're going up a slight incline." "That's wonderful!" exclaimed the passenger. "I thought it was remarkable if we were on a down grade, but under the circumstances it's miraculous." "What is?" growled the conductor. "What're you talking about, anyhow?" "I simply can't understand how that cow should beat us going up hill, that's all," sighed the impetuous passenger, sinking into his seat to figure it out.—*Chattanooga Times.*

A car-builder says that the way the seats are arranged in a passenger coach guarantees broken limbs and crushed bodies whenever there is a collision. And the *Detroit Free Press* man, who always travels on a pass and has to stand up when the car is crowded, consoles himself with the reflection that the man on the wood-box has the only safe seat.

Railroad Building in Salvador.

A company known as the Davenport Construction Co. has been organized in New York for the purpose of building railroads in Central America. The object of the company is to build and operate a railroad and telegraph lines between the port of La Libertad and San Salvador, under a concession granted by the republic of Salvador, and also to operate steamboat and sailing vessels on certain rivers in the republic. The capital stock is $375,000. The incorporators are George W. Carr, William C. Page, H. W. Grinnell, Daniel E. Davenport, John Logan, J. W. Hobson and Gustav Walter, of New York.

General Railroad News.

MEETINGS AND ANNOUNCEMENTS.

Meetings.

Meetings will be held as follows:

Marquette, Houghton & Ontonagon, special meeting, in Marquette, Mich., April 16, to vote on an agreement of consolidation with the Houghton & L'Anse Co.

Missouri Pacific, annual meeting, at the office in St. Louis, March 13, at 9 a. m. Transfer books close Feb. 10.

St. Louis, Iron Mountain & Southern, annual meeting, at the office in St. Louis, March 13, at 9 a. m.

Union Pacific, annual meeting, at the office, in New York, March 7, at 10 a. m. Transfer books close Feb. 19.

Wabash, St. Louis & Pacific, annual meeting, at the office in St. Louis, March 13, at 9 a. m.

Railroad Conventions.

The *National Association of General Passenger and Ticket Agents* will hold a special meeting at the National Railway Club Rooms, No. 46 Bond street, New York, beginning March 13, at 11 a. m. This meeting is called by request to take the place of the regular spring meeting, which was appointed for March 20, at Jacksonville, Fla.

The *General Time Convention* will hold its spring meeting at the Lindell House in St. Louis, April 11.

The *Southern Time Convention* will meet at the National Railway Club Rooms, No. 46 Bond street, New York, April 18.

Technical Meetings and Conventions.

The *Master Mechanics' Association* will hold its annual convention in Chicago, June 19 next.

Dividends.

Dividends have been declared as follows:

Boston & Albany, 2 per cent., quarterly, payable March 31, to stockholders of record March 1.

Buffalo, New York & Philadelphia, 1¼ per cent. on preferred stock, payable March 26. Transfer books close March 15. Holders of preferred stock of the various companies now included under this name are requested to exchange their certificates for stock of the consolidated company as promptly as possible.

Car Trust of Pennsylvania, 1½ per cent., quarterly, on series C, D and E stock, payable March 1.

Delaware and Hudson Canal Co., 1¾ per cent., quarterly, payable March 10. Transfer books close Feb. 24.

Georgia Railroad & Banking Co., 2½ per cent., quarterly, payable April 15.

Iowa Falls & Sioux City (leased to Illinois Central), 1¼ per cent., quarterly, payable March 1.

Oregon Improvement Co., 3½ per cent., semi-annual, payable March 15. Transfer books close March 5. This is the first dividend.

Railway Car Trust of Pennsylvania, 1¼ per cent., quarterly, on Series F stock, payable March 1.

Mail Service Extensions.

Mail service has been ordered over new railroad lines as follows:

Port Huron & Northwestern, service ordered over the branch from Palm, Mich., to Port Austin, 35 miles; to begin March 2.

Port Huron & Southwestern, service ordered from Port Huron, Mich., to Almont, 31 miles; to begin March 2.

Western Association of General Passenger & Ticket Agents.

At the regular meeting in St. Louis, Feb. 14, there was a large attendance. Mr. A. J. Smith, presided, with Mr. W. H. Dixon as Secretary.

After the minutes of the last meeting had been read and approved, the election of officers was held.

The next matter taken up was in reference to the honorary memberships. There are a good many railway men who are now ex-ticket and passenger agents, and their connection as honorary members was discussed.

The most important action of the meeting was taken on the baggage question. After some discussion the St. Louis roads all agreed to sign the baggage agreement adopted recently by the Chicago roads, and which we have heretofore published in full.

Another question taken up was the selling of tickets to parties under the land-grant rule. The roads have had an agreement by which excursion parties going to the West and Northwest to look after lands were to be charged two cents a mile each way, but it is claimed that one or two had

been making a lower rate than the tariff agreement. A resolution making each line agree to stand by the land-rate tariff was offered but not agreed to, and an adjournment was then taken until next day.

On the second day the first matter taken up was the present system of mileage tickets. A proposition was made to adopt a substitute ticket, but the members could not agree upon the question, and a committee, consisting of Mr. Lowell, of the Chicago, Burlington & Quincy, Mr. Barnes of the Northern Pacific and Mr. Stebbins of the Union Pacific, was appointed to report a plan at the next meeting of the association.

The question of excursions to land points was next taken up, and it was agreed that all excursions of this kind that have been advertised for the month of March should be allowed. Owing to the fact that representatives of some of the lines interested were not present, no further action on the question was taken, but a committee was appointed to confer with them.

It was decided to hold the next regular meeting of the Association at Cleveland, the second Wednesday in May. After finishing up the regular routine business the Association adjourned.

Baltimore & Ohio Relief Association.

At the quarterly meeting held in Cumberland, Md., last week, the annual report of the Secretary, Dr. W. T. Barnard, was read. It shows that between May 1, 1880, when first inaugurated, and Sept. 30, 1882, the Association has issued 28,703 policies, and its membership now includes 94 per cent. of all Baltimore & Ohio employés. There have been 15,952 payments of benefits amounting in all to $344,075.73, of which $302,617.69 were expended subsequent to Jan. 1, 1881.

It also appears from the proceedings of the committee that in addition to the above between Oct. 1 and Dec. 31, 1882, 2,142 payments, aggregating $44,764.82, were made to members. The Association on Sept. 30, 1882, had a net surplus of $30,112.67, which the committee of management has ordered to be devoted to maintaining during the fiscal year ending Sept. 30, 1883, the 100 per cent. increased mutual death benefits for the past two years awarded members as a dividend for surplus balance. The report shows the society to be in a most flourishing condition. It shows that the savings and building features inaugurated in July last are becoming extremely popular. Notice was given of resolutions to be considered at the next quarterly meeting authorizing members of the Association on retiring from the company's service to retain their interest in the death feature, and also authorizing clerks and others, not hazardously engaged, to obtain membership in that feature.

ELECTIONS AND APPOINTMENTS.

Addison & Northern Pennsylvania.—The officers are as follows: President, Thomas C. Platt, Oswego, N. Y.; Vice-President, D. L. Pattison, Elkland, Pa.; General Superintendent, F. N. Baker, Addison, N. Y.; Secretary and Auditor, S. H. Morgan, Addison, N. Y.; Treasurer, W. S. Sheldon, New York.

Alabama Railroad Commission.—The Governor of Alabama has nominated and the Legislature has chosen for another term Messrs. W. L. Bragg, James Crook and Charles P. Ball, the old Commissioners.

Avon, Geneseo & Mt. Morris.—At the annual meeting last week the following directors were chosen: L. C. Bingham, Amos Bronson, H. E. Brown, George Ellwanger, George A. Green, Hugh J. Jewett, Archibald McVean, H. P. Mills, Wm. Mudgett, George W. Phelps, Willis Phelps, M. F. Reynolds, Wm. A. Wadsworth. The road is leased to the New York, Lake Erie & Western.

Baltimore & Ohio Relief Association.—At the recent quarterly meeting the following Committee of Management was chosen for the ensuing year: A. J. Cromwell, Arthur Sinsel, Main Stem; J. E. Sampsel, Pittsburgh Division; W. H. Harrison, David Lee, Trans-Ohio divisions.

Buffalo, New York & Philadelphia.—The following appointments have been confirmed, taking effect Feb. 14: Franklin D. Locke, General Solicitor in New York; Samuel Gustine Thompson, General Solicitor in Pennsylvania; Oliver Watson, Assistant to the President; Reuben Hall, Assistant Treasurer; Geo. S. Gatchell, General Superintendent; E. T. Johnson, General Traffic Manager; Wm. L. Doyle, Auditor; Philip Joyce, Assistant Auditor; Wm. S. Baldwin, General Passenger Agent; J. H. Poole, Purchasing Agent; A. Vandivort, Superintendent River Division; E. H. Witter, Superintendent Pittsburgh Division; Jas. T. Gardner, Superintendent Buffalo Division; R. M. Patterson, Superintendent Rochester Division; J. W. Watson, Superintendent Narrow-Gauge Division.

Chicago & Atlantic.—Mr. Alexander Mackay has been appointed General Freight Agent, with office in Chicago. He is now Assistant General Freight Agent of the Michigan Central road, and has served with the Great Western of Canada, the Blue Line and the Erie & North Shore Line.

Chicago, Milwaukee & St Paul.—Mr. Fred Wild having resigned, the territory heretofore under his charge will be assigned as follows: The Racine & Southwestern Division in Wisconsin and Illinois, to Mr. Dwight W. Keyes, Assistant General Freight Agent; the Racine & Southwestern Division in Iowa, to Mr. A. J. McCormick, Assistant General Freight Agent.

Mr. J. V. Mahoney has been appointed Division Freight Agent, with office in Milwaukee, and will have immediate charge of freight traffic on the Council Bluffs Division between Chicago and Council Bluffs inclusive, and the Racine & Southwestern Division between Elk River Junction and Clinton, Ia., inclusive.

Connecticut Railroad Commission.—The Governor of Connecticut has nominated Mr. George M. Woodruff as Railroad Commissioner for another term of three years. Mr. Woodruff is the lawyer member of the Commission, and has served for three terms.

Delaware, Lackawana & Western.—At the annual meeting in New York, Feb. 20, the following were chosen: President, Samuel Sloan, New York; Managers, George Bliss, Percy R. Pyne, Wilson G. Hunt, E. W. Holbrook, Elias S. Higgins, Jay Gould, Sidney Dillon, Russell Sage, Wm. E. Dodge, Jr., Edgar S. Auchincloss, New York; Benjamin G. Clarke, Jersey City; Wm. Walter Phelps, Teaneck, N. J.; John I. Blair, Blairstown, N. J.; Andrew T. McClintock, Wilkesbarre, Pa. The new managers are Messrs. Dodge, Auchincloss and McClintock, who succeed Wm. E. Dodge, Moses Taylor and George Bulkley, deceased. The board re-elected Frederick F. Chambers Secretary; Frederick H. Gibbens, Treasurer.

Driftwood & Western.—The officers of this new company are: President, John P. Harlan; Directors, H. R. Gill, John R. Rue, James McCarren, Charles C. Carman, Franklin Roberts, Horace Pettit. Office in Philadelphia.

East St. Louis & Carondelet.—At the annual meeting in East St. Louis, Feb. 15, the following directors were chosen: E. Reynolds, St. Louis; J. S. Peers, Collinsville, Ill.; C. H. Seybt, Highland, Ill.; Williamson Plant, Greenville, Ill.; John B. Bowman, East St. Louis, Ill.; W. R. McKeen, Terre Haute, Ind.; J. N. McCullough, Thomas D. Messler, Pittsburgh, Pa.; J. W. Conlogue, Corning, N. Y. The board elected Thomas D. Messler President; John B. Bowman, Secretary; John E. Davidson, Treasurer; Joshua Hill, General Superintendent. The road is controlled by the Pennsylvania Company.

Erie & Genesee Valley.—This company last week elected the following directors: James Faulkner, Jr., Daniel W. Noyes, Charles Shepard, Hugh T. McNair, George Sweet, William Hartman, James Krein, Timothy B. Grant, A. T. Wood, J. C. Jackson, John Hyland, George Hyland, Sydney Sweet. The road is leased to the New York, Lake Erie & Western.

Georgia.—Mr. Joseph W. White has been appointed General Traveling Passenger Agent of this road.

Kansas Coal Belt.—The officers of this new company are: President and General Manager, Caleb H. Malin; Secretary and Treasurer, J. T. Leonard. Offices at Girard, Kansas.

Louisville, Evansville & St. Louis.—At the annual meeting in Mt. Carmel, Ill., the following directors were chosen: Bluford Wilson, Springfield, Ill.; Samuel Bayard, R. K. Dunkerson, Wm. Heilman, Evansville, Ind.; Morris McDonald, New Albany, Ind.; St. John Boyle, C. Brockenbrough, Arthur Cary, Bennett H. Young, Louisville, Ky.; Isaac T. Burr, Jonas H. French, John Goldthwait, W. T. Hart, C. N. Nutt, F. B. Taylor, F. B. White, James H. Wilson, Boston. This is substantially the old board.

Mobile & Spring Hill.—At the annual meeting in Mobile, Ala., Feb. 13, the following directors were chosen: R. P. Deshon, F. Ingate, F. A. Luling, Daniel McNeill, L. Schwartz, M. Schwartz, L. M. Wilson. The board elected Daniel McNeill President; F. Ingate, General Manager; O. F. Sheldon, Secretary.

New London Northern.—At the annual meeting, Feb. 7, the following directors were chosen: Robert Coit, Wm. W. Billings, Wm. H. Barnse, Benjamin Stark, Augustus Brandegee, J. N. Harris, C. A. Williams, New London, Conn.; Thomas Ramsdell, Windham, Conn.; C. H. Osgood, Norwich, Conn.; James A. Rumrill, Springfield, Mass.; Wm. H. Hill, Boston. The board elected Robert Coit President and Treasurer; J. A. Southard, Secretary. The road is leased to the Vermont Central trustees.

New York & Boston Inland.—The directors have elected officers as follows: President, Charles Burleigh, Fitchburg, Mass.; Secretary, Wm. Rotch, Boston; Treasurer, George Cook, Boston.

New York, Lackawanna & Western.—At the annual meeting in New York, Feb. 20, the following directors were chosen: Samuel Sloan, John I. Blair, Elias S. Higgins, George Bliss, Percy R. Pyne, William E. Dodge, Jr., Benjamin G. Clarke, Jay Gould, Sidney Dillon, Russell Sage, Solon Humphreys, John F. Dillon, Walter S. Gurnee. The road is leased to the Delaware, Lackawanna & Western.

New York, West Shore & Buffalo.—Mr. Harry Linn has been appointed Master Mechanic. He served his time in the Renovo shops of the Philadelphia & Erie, and has since been Assistant to Mr. Howard Fry, Superintendent of Motive Power.

Ottawa & Gatineau Valley.—This Canadian company recently elected J. M. Currier, President; C. H. Mackintosh, Vice-President; H. B. Mackintosh, Secretary; J. Murray Mitchell, Managing Director.

Pennsylvania.—Mr. Samuel J. Barclay has been appointed Superintendent of the new freight transfer station at Mantua, Philadelphia.

Pennsylvania Railroad Leased Lines.—At meetings held in Philadelphia, Feb. 20, officers were chosen as below for the companies named, whose roads are leased to the Pennsylvania Railroad Co.: *Bedford & Bridgeport.*—President, John P. Green; directors, R. D. Barclay, W. W. Barclay, John Cessna, J. N. DuBarry, John G. Hartley, Strickland Kneass, Wistar Morris, George B. Roberts, S. L. Russell, N. Parker Shortridge, Edmund Smith, J. Price Wetherill. *Mifflin & Centre County.*—President, J. N. DuBarry; Directors, Alexander Biddle, G. W. Elder, John P. Green, Strickland Kneass, Samuel Marloy, James H. Mann, Wistar Morris, G. B. Roberts, N. Parker Shortridge, Edmund Smith, J. Price Wetherill, Henry D. Welsh.

Pittsfield & North Adams.—This company last week re-elected Frank H. Appleton President; Charles E. Stephens, Clerk and Treasurer. The road is leased to the Boston & Albany.

South Carolina.—Mr. Joseph W. White has been appointed General Traveling Passenger Agent of this road.

Western Association of General Passenger and Ticket Agents.—At the meeting in St. Louis last week the following officers were chosen for the ensuing year: President, H. C. Townsend; Vice-President, C. S. Stebbins; Secretary, J. M. Chesbrough; Executive Committee, S. K. Hooper, D. Wishart, O. W. Ruggles and E. A. Ford; Board of Arbitration, Percival Lowell, France Chandler and J. E. Lockwood.

Wheeling & Lake Erie.—At the annual meeting held in Toledo, O., Feb. 21, the following directors, one-third of the board, were chosen: J. W. Wigham, Huron, O.; J. G. Warwick, Massillon, O.; Noah H. Swayne, Jr., Toledo, O.; Oliver Garrison, St. Louis; W. J. Forrest, New York. The board re-elected Oliver Garrison, President; M. D. Woodfood, Vice-President and General Manager.

PERSONAL.

—It is reported that Mr. J. H. Jenkins has resigned his position as Superintendent of the Dubuque Division of the Chicago, Milwaukee & St. Paul road.

—Mr. H. P. Stanwood, who comes to New York to take the position of General Agent of the California Fast Freight Line (Union and Central Pacific railroads) from San Francisco, where for some ten years he has been General Pacific Coast Agent, was for some years before taking the last named position General Ticket Agent of the Chicago & Northwestern Railway.

— Mr. Charles S. Mellen, who has been Auditor of the Boston & Lowell and the Concord companies since they have worked under the joint agreement, has been offered a position by each company. The Boston & Lowell wants Mr. Mellen as Superintendent, and the Concord as General Freight and Passenger Agent. He has not yet accepted either position.

—Mr. Isaac B. Futvoye, Superintendent of the Northern and Western divisions of the Central Vermont lines and of the Waterloo & Magog road, was presented with a very handsome silver set and a complimentary address by his friends on the line of the last-named road. The presentation was made at a banquet at Magog, P. Q., Feb. 7, and Mr. Futvoye acknowledged the gift in an appropriate manner.

—Mr. Robert Asa Packer died in Jacksonville, Fla., where he had gone for his health, Feb. 19. He was a son of the late Hon. Asa Packer, and one of the directors of the Lehigh Valley Railroad Co. He had been in ill health for several years, and was in the habit of spending his winters in Florida. Mr. Packer was born at Mauch Chunk, and, at the time of his death, was in his fortieth year. His home was at Sayre. Besides being a director of the Lehigh Valley Railroad since his father's death, three or four years ago, he was president of the Geneva, Ithaca & Sayre Railroad Co., and the Pennsylvania & New York Canal & Railroad Co.'s lines controlled by the Lehigh Valley road. He was also a director of other roads connected with the Lehigh Valley Co., and was identified with other interests in which his father had been engaged. In 1880 he was the Democratic candidate for Congress from the Fifteenth District of Pennsylvania, but was defeated by the Republican candidate, Mr. C. C. Jadwin. Mr. Packer leaves a wife but no children. His wife is the daughter of Victor E. Piollet.

TRAFFIC AND EARNINGS.

Railroad Earnings.

Earnings for various periods are reported as follows:

Month of January:	1883.	1882.	Inc. or Dec.	P. c.
Alabama Great Southern.	$84,131	$60,574	I.	$23,557	38.8
Central, of Georgia.	311,200	332,086	D.	21,886	6.5
Net earnings.....	141,704	50,948	I.	9 ,851	178.4
Central Pacific.....	1,718,000	1,829,469	D.	111.469	6.1
Charlotte, Col. & Aug....	70,617	61,774	I.	8,843	14.2
Net earnings.....	31,270	19,4 5	I.	11,855	61.1
Columbia & Greenville...	71,077	70,588	I.	509	0.7
Gulf, Col. & Santa Fe.....	162,015	100,936	I.	61,079	60 5
Houston, E. & W. Texas..	24,848	18,286	I.	6,562	36.0
Nash., Chatta. & St. L.. ..	197,388	179,753	I.	20,635	15.6
Net earnings.....	85,317	59,605	I.	25,712	43.1
Richmond & Danville.....	259,757	289,627	D.	29,870	10.3
Net earnings.....	117,724	79,640	I.	38,084	48.6
St. Louis & Cairo..... ..	30,375	32,452	D.	2,077	6.4
Vicksburg & Meridian....	51,138	47,319	I.	3,829	8.1
Virginia Midland.....	99,950	76,020	I.	20,930	27.5
Net earnings.....	26,790	6,376	I.	20,424	321.5
Western North Carolina..	20,090	13,642	I.	6,448	47.5
Net earnings....	5,021	.....	.....	.....	.....
First week in February:					
Chi. & Grand Trunk.....	$38,843	$37,353	I.	$1,490	4.0
Second week in February:					
Chi. & Eastern Illinois....	$29,045	$32,250	D.	$3,205	9.9
Denver & Rio Grande.....	109,000	97,900	I.	11,100	11.3
Northern Pacific.....	102.374	67,200	I.	35,174	52.3
St. P., Minn. & Manitoba..	91,000	115,000	D.	24,000	20.9
Three months ending Dec. 31:	1882.	1881.			
N. Y., Lake Erie & West..	$5,329,237	$5,101,543	I.	$227,694	4.4
Net earnings.....	1,842,373	1,616,642	I.	195,631	11.8
Month of December:					
N. Y., Lake Erie & West..	$1,691,404	$1,571,208	I.	120,196	7.7
Net earnings	441,739	381,382	I.	60,357	15.8

Provision Exports.

The Bureau of Statistics reports the exports of fresh and salt beef, tallow, butter and cheese, which we give together as "cattle products," and of bacon, hams, lard and pork, included below in "hog products," for the month of January last as follows in packages:

	1883.	1882.	Decrease.	P.c.
Cattle products...	17,247,635	24 937,232	7,689,597	38.4
Hog products... ..	84,813,081	104,307,285	19,494,204	18 7
Total	102,060,716	129,244,517	27,183,801	21.0
Value	$10,649,119	$13,200,379	$2,551,260	19.3

In 1881 the value of these exports in January was $15,218,282, and the decrease since then is 43 per cent.

For the three months ending with January the exports, not including butter and cheese, have been:

	1882-83.	1881-82.	1880-81.
Cattle products.....	42,188,944	45,708,250	60,659,051
Hog products.....	217,154,363	269,938,060	410,254,289
Total.....	259,343,307	315,646,310	470,913,340
Value.....	$27,961,925	$31,984,298	$38,551,058

Since the year before last the decrease in the total quantity exported is 81 per cent., but in the value of the exports only 27 per cent.

Live Stock Rates.

Commissioner Fink has issued a circular announcing that the Standing Committee of the Joint Executive Committee has adopted the following:

"*Resolved*, That the following rules be observed in fixing live-stock rates to Albany and New York and from the various Western cities: The net rate from Chicago to Albany, N. Y., shall be 20 per cent. less than the net rate from Chicago to Boston. The difference in cents per 100 pounds shall govern rates to those destinations from all Western points. For example: The present rate on cattle from Chicago to Boston is 40 cents. Under the foregoing rule the net rate from Chicago to Albany would be 32 cents, or the difference between the two rates—eight cents. During the prevalence of this tariff the rate from all points west of Albany will be eight cents per 100 pounds less than the rates from same point to Boston."

The Lackawanna Line.

This new fast freight line has been established as a result of the extension of the Delaware, Lackawanna & Western to Buffalo. The New York connection is over that road, and a line to Boston has been established over the Delaware & Hudson Co.'s road from Binghamton, the Boston, Hoosac Tunnel & Western and the Fitchburg roads.

Grain Movement.

For the week ending Feb. 10 receipts and shipments of grain of all kinds at the eight reporting Northwestern markets and receipts at the seven Atlantic ports have been, in bushels, for the past seven years:

Year.	Northwestern receipts.	Northwestern shipments.	Atlantic receipts.
1877	1,419,072	1,111,317	1,906,159
1878.....	2,676,554	2,004,448	4,151,378
1879.....	2,850,118	1,639,882	4,713 985
1880.....	4,279,151	1,997,667	2,377,028
1881.....	2,460,285	1,639,703	2,001 199
1882.....	4,327,788	2,891,409	2,394,381
1883.....	3,503,907	2,471,478	2,656 554

The receipts of the Northwestern markets for the week were thus 824,000 bushels (19 per cent.) less than last year, and 775,000 less than in 1880, but more than in any other year. They were 1,911,000 bushels less than the previous week of this year, when, however, receipts were extraordinary.

The shipments of these markets for the week were 420,000 bushels less than last year, but more than in the corresponding week of any previous year. They were 758,000 bushels less than in the previous week of this year, but were nearly equal to the average of this year. Of the shipments of the week 92,500 bushels, or 3¾ per cent., went down the Mississippi.

The Atlantic receipts for the week were larger than in any corresponding week since 1879, but much less than in 1878 and 1879, when rates were very low. They were 844,000 bushels less than in the previous week of this year, and smaller than in any other this year save one.

The decrease in Northwestern receipts is larger every-